AUGUST, 1957

Industrial FINISHING

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Factories: Chicago, Ill. • Cincinnati, Ohio • Elizabeth, N.J.
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"Integration," an impression by C. Arthur Rosser

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And when you make Shell Chemical your source for solvents, you can be sure that the products you receive will meet or exceed the highest purity standards set by industry.

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gives you the proven finish combination* for fine appliances.

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Epoxy primer for flocoat, dip or spray. Flowing, flexibility, stability and adhesion characteristics are excellent High resistance to detergents, humidity and salt spray.

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High gloss Alkyd-Amino finish available in white and custom colors. Manual, automatic or electrostatic spray application. Excellent hiding and color retention. High degree of hardness and highly resistant to detergents, humidity and salt spray.

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Grand Rapids, Michigan

Makers of the Famous ®**Guardsman** *Finish and* ®**Guardsman** *Cleaning Polish*

*THE BETTER THE FINISH THE BETTER THE BUY

August, 1957
Vol. XXXIII, No. 10

BPA

A monthly magazine for company executives, production superintendents, process engineers, chemists, purchasing agents, paint shop and finishing department foremen of industrial plants where product surface cleaning and painting are major operations in the manufacture of parts and products of all kinds.

Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Associate Editor

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33 THIRTY-THIRD YEAR OF PUBLICATION

Translucent Protective Fabric. A new fabric that will keep working areas free of dust and contaminating fumes, but will allow the penetration of natural light, has been developed by Herculite Protective Fabrics, 140 Little St., Belleville 9, New Jersey.

A double lamination of tough vinyl plastic over a mesh of Fortisan 36, has, through intense research, resulted in Herculite F36 Clear. This tough laminated light-weight, acid-resistant fabric will allow natural light to flood a working area thus reducing the need for artificial light.

Herculite F36 Clear is non-porous; it offers tremendous tear-resistance; it will eliminate the entry of foreign matter and afford protection from the elements. It is waterproof, fire-resistant, rot and mildew proof. Due to its lightness in weight this fabric is easily set up or taken down and requires a minimum of storage space when not in use.

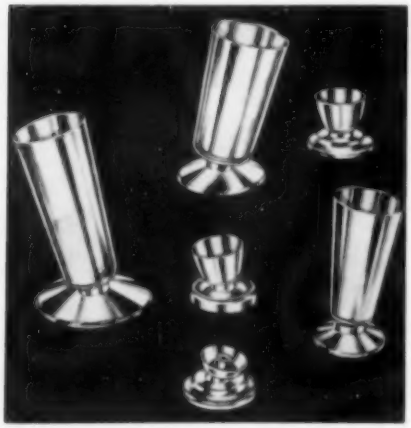
* * *

Furniture Business. Furniture shipments in the first six months of 1957 leveled out on a high "plateau," only 5% under the all-time high record set in 1956. It is interesting to note that the first and second quarters held at the same ratio compared with last year. With substantial improvement in the amount of unfilled orders on the books of furniture manufacturers at the end of June, outlook for the full year is for a continuation of sound, profitable operation.—*NAFM.*

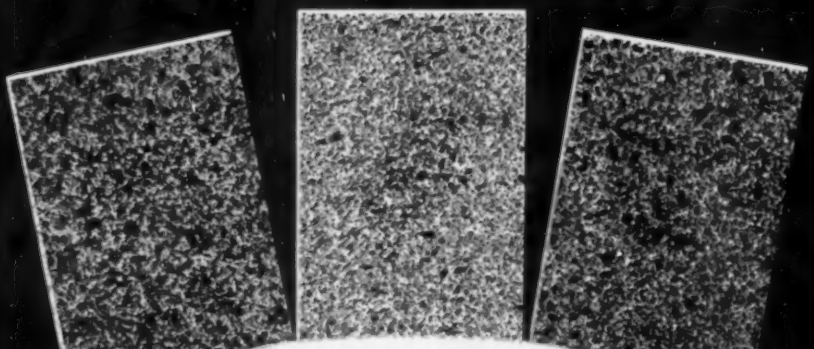
* * *

Non-Breakable Windows. When a new type of industrial window is accidentally struck by equipment or persons in heavy traffic areas, it only bends slightly without breaking or cracking. If jarred loose or knocked from its frame, it can be reset quickly with an adhesive. [*Cont'd on page 6*]

Metal ends for furniture legs. These new ferrule-glides were designed by an internationally known furniture designer. . . . Countless custom variations are possible; they tilt and swivel to facilitate leveling on any floor surface. Featured by the Carr Fastener Co. division of United-Carr Fastener Corp. at the 1957 NAFM Supply, Equipment & Fabric Fair, August 25-28 at the Conrad Hilton Hotel, Chicago, Illinois.



DOLAN'S multicolor finish



SPEX multicolor
ONE COAT FINISH

For economy, beauty and durability, use Dolan's SPEX. Spray a combination of two or more distinct contrasting or harmonizing colors in one coat with standard spray equipment. Will hide all surface irregularities and is suitable for finishing wood, metal, plastic, brick, concrete and all types of composition board. Dries like lacquer—good coverage—excellent resistance to water—acids—abrasives—chemicals and marring. Available in a great number of attractive stock colors. Color card supplied upon request.

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NON-TOXIC NON-FLAMMABLE
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2641 W. GRAND AVENUE, CHICAGO 12, ILL.

The safety glazing material is a laminate of Bakelite rigid vinyl sheet, and is available in the form of clear or mottled, translucent panels from Laminations, Inc., Scranton, Penna. The material is semi-flexible, light in weight and easy to install.

Sheets can be quickly cemented to the frame without the need of glaziers' points or putty. They are designed primarily for interior windows or partitions in areas where conventional windows are subject to breakage due to vibration, concussion or rough contact with materials, equipment or personnel. Although the laminate is more expensive than conventional glazing materials, the overall cost is less because the cost of installation is so low. The panels have excellent light diffusion, are good electrical insulators and will not support combustion.—*News Bureau, The Bakelite Company.*

* * *

Your Ten Best Tools. Take care of "Your Ten Best Tools"—your fingers. That's the advice the National Safety Council imparts in a new 8-page pamphlet.

Cartoon illustrated, the colorful pamphlet warns workers against hand injuries.

"Working hands always are exposed to danger," the Council declares in its advice on how to protect them.

Splinters, careless use of equipment, machinery and solvents—they're all potential destroyers of the ten best tools.

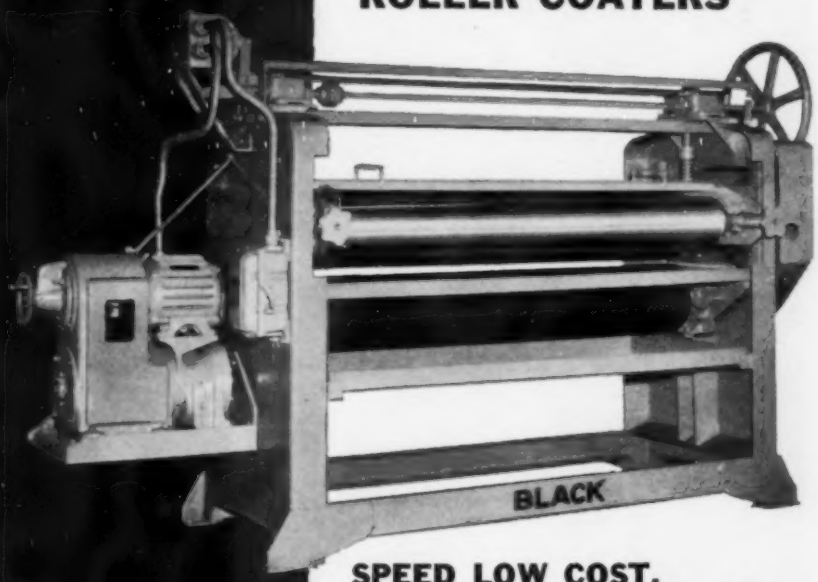
Regardless of your line of work, if you handle with care your "tools" you'll keep them at top performance, the Council publication advises.

Further information and prices may be obtained from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

(Continued on page 91)

BLACK BROTHERS

HEAVY-DUTY ROLLER COATERS



FEATURES

- 21 Standard Sizes From 8" to 122" Wide Capacities
- 0-4½" Thickness Adjustment
- Single or Double Coaters
- Patented Safety Control
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Plus many extra-value optional features

SPEED LOW COST, HIGH QUALITY COATING

Whether your finishing needs are intermittent or geared to 24-hour-a-day automation, Black Brothers Roller Coaters can boost your production, reduce down-time, cut coating costs. These are heavy-duty machines, built rugged and rigid to *maintain* high quality production and trouble-free performance. Heavy distortion-free rolls apply *uniform* coatings — assure longer coating roll life. Chrome coated oversize doctor rolls give finer doctoring action.

Versatile, economical—Black's Roller Coaters apply lacquers, paints, sealers, varnishes, waxes, etc. to flat work such as wood, metal, plywood, composition board, hardwood, plastic, cardboard, cement board.

Write today for literature describing the oldest — most complete line of roller coating equipment, available with plus-value optional features to meet *your* finishing needs.

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Latex metal paints eliminate fire hazard

Metal paints formulated with Dow latex offer metal fabricators important new advantages. Dow industrial latexes provide the basis for revolutionary new finishes that are eliminating old problems in fire hazards.

When you use latex paints you provide safer working conditions and fire insurance rates are lower because water replaces flammable solvents. And, disagreeable odors are reduced to a minimum.

Get in touch with Dow for the technical information you need to take advantage of these revolutionary new latex metal finishes. THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept., **PL1840Z-1.**

LATEX T.M.

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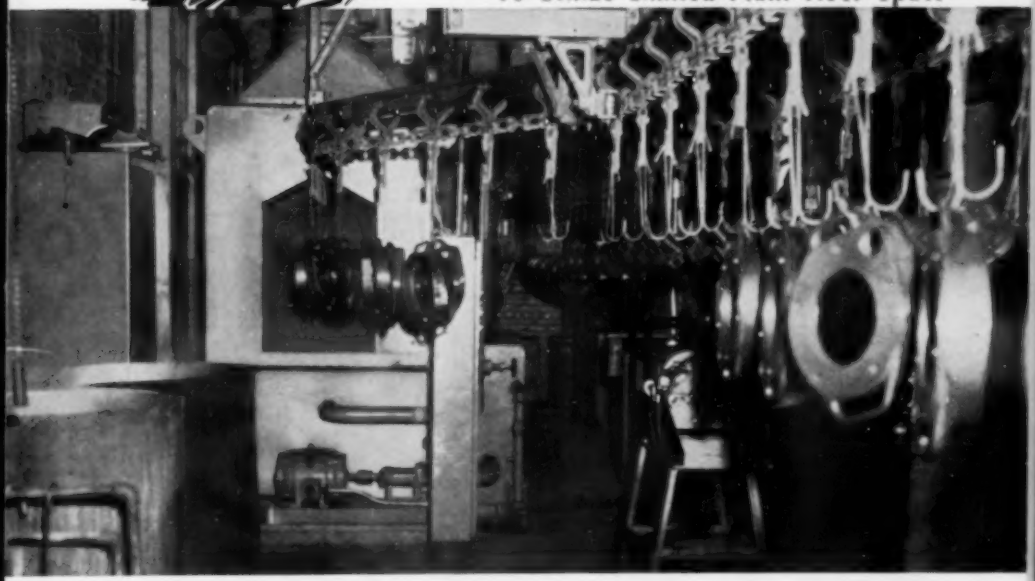
POWER SPRAY WASHERS

by PETERS-DALTON

Are Designed, Engineered, Built and Installed To Utilize Limited Plant Floor Space



Plant engineers are frequently faced with serious limitations of available space when searching for locations to install greatly needed production equipment. Problems such as these are met daily by Peters-Dalton. More than a quarter century of designing, engineering, fabricating and installing finishing equipment has qualified P-D to readily meet needs such as these.

The illustration here is of a P-D Gas Fired Single Stage Washer, designed to handle miscellaneous machine castings up to 35 lbs. in weight at a rate of 5000 lbs. per hour. The photograph clearly illustrates the careful planning required to make this important installation "fit," while still giving maximum productivity.

Why not send us your requirements, along with a layout of the area in which you plan an installation? Just write, wire or phone . . . we'll be glad to tell you more.

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- *Industrial Washing Equipment*
- *Drying and Baking Ovens*
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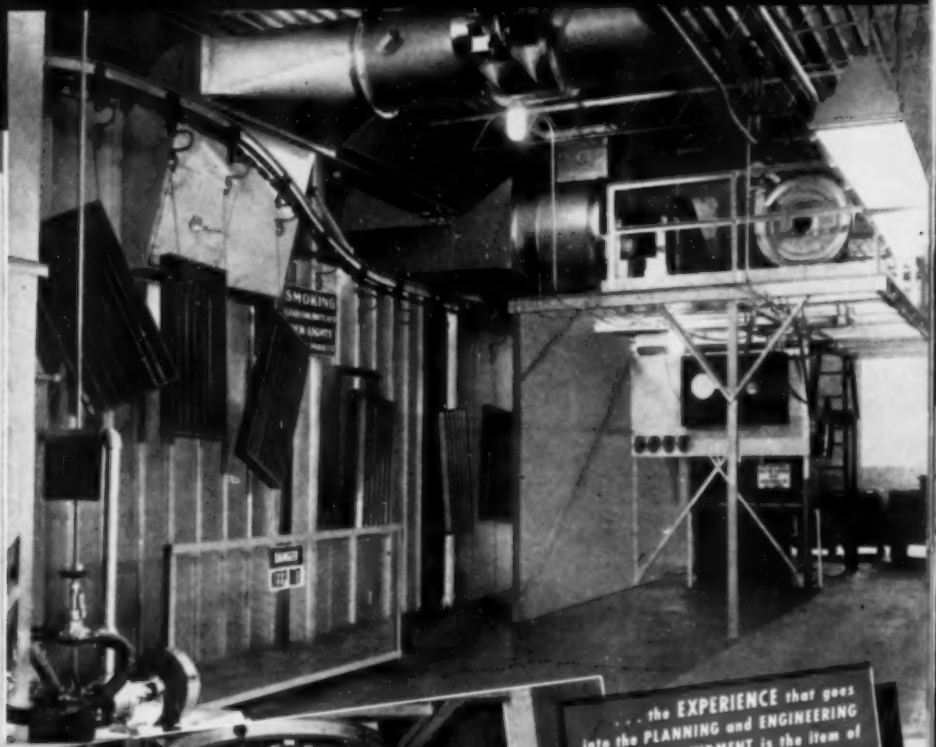
COMPLET



. . . the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

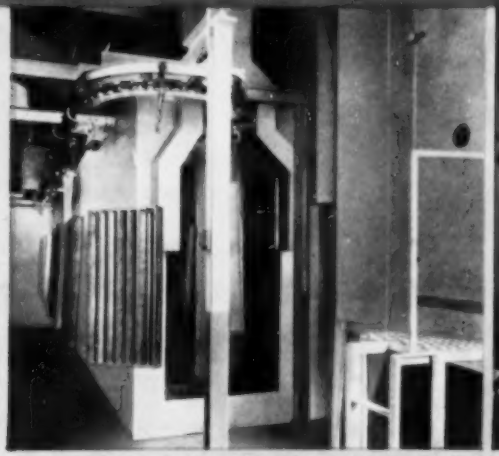
Loading and Unloading Stations in the Complete Mahon Finishing System in the Airolite Plant. Processing is Automatic and Continuous.

Directly above is a General View of the Complete, Conveyorized Mahon Finishing System recently installed in the Airolite Company's Plant, Marietta, Ohio. It shows an Oven Heating Unit and the Control Cabinet which houses the Temperature Recorder, Automatic Controls and Safety Devices. The Ventilated Solvent Vapor Chamber is visible at the left.

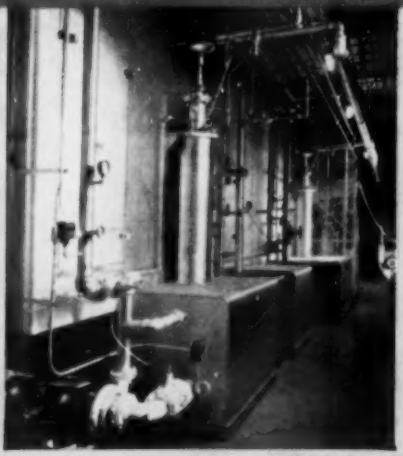
M

E Finishing SYSTEMS

. . . for ENAMELS • LACQUER • PAINT • VARNISH



Exit Opening in the Mahon Dry-Off Oven. This Oven and the Paint Baking Oven are Combined and Built as One Unit.



Partial View of Mahon Five-Stage Metal Cleaning and Bonderizing Machine in the Airolite System.

High Quality, Durable Finish on AIROLITE LOUVERS is Produced in a COMPLETE, MODERN MAHON FINISHING SYSTEM!

The Airolite Company, Marietta, Ohio, manufacturers of high quality fixed and adjustable Louvers of all types, and numerous other metal products, have recently modernized production facilities which now include a complete, new Mahon Finishing System specially designed to accommodate all products presently in production as well as several items planned for the future. The new Mahon Finishing System in the Airolite plant includes a five-stage Metal Cleaning and Bonderizing Machine, Dry-Off Oven, Flow Coating Machine with a Ventilated Solvent Vapor Chamber, and a Paint Baking Oven . . . processing is continuous and automatic from conveyor loading to unloading.

This is one of thousands of Mahon finishing systems that have been specially designed and installed in each case to meet the specific requirements of the manufacturer. If you have a finishing problem, or are contemplating new finishing equipment, you, too, will want to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you'll find them better qualified to advise you, and better qualified to do the all-important planning, engineering and coordinating of equipment, which is the key to producing the finest finishes at minimum cost. See Sweet's Plant Engineering File for complete information, or write for Catalog A-657.

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Engineers and Manufacturers of Metal Cleaning and Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Spray Booths, Flow Coaters and Dip Coaters, Drying and Baking Ovens, and Complete Conveyorized Finishing Systems.

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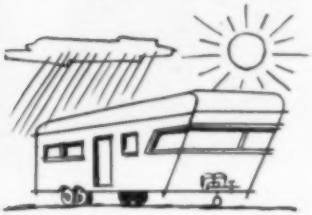
If it's made of ALUMINUM –

SHEET ALUMINUM

TUBULAR ALUMINUM

CAST ALUMINUM

If you want paint to really STICK....



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UP TO 3 GPM. . . supply up to 6 guns in direct or circulating system.

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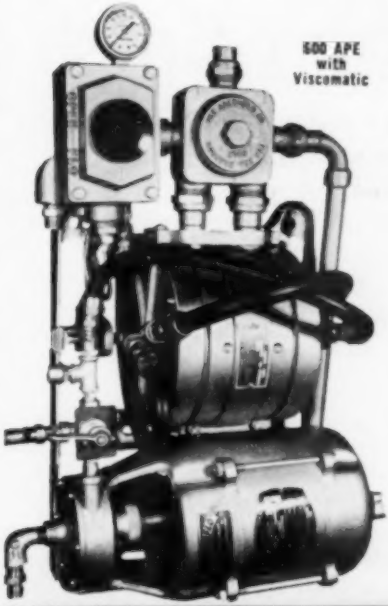
Hot Spray Systems

There's a good reason why finishing departments use more Spee-Flo Hot Spray Systems than any other make. Superior equipment, a national sales and service organization and the availability of local Spee-Flo engineers combine to assure a tailor-made system for every application.

SPEE-FLO HOT SPRAY HEATERS



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to a better finish

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Spruance

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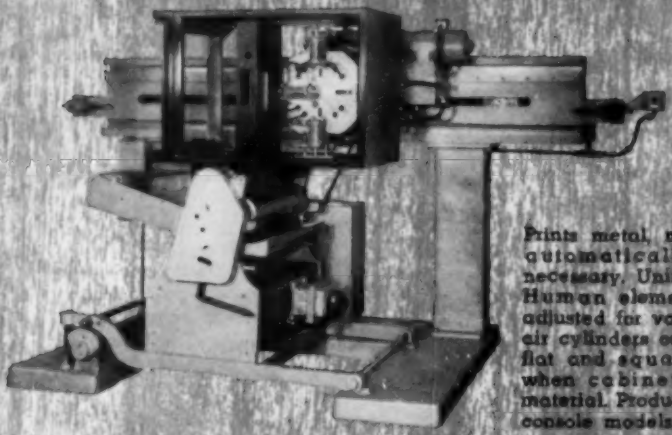
Spruance has developed special eye-appealing, tough and fast-drying primers and enamels for vehicles and machines subjected to the rigors of weather, corrosion and rough handling. These coatings are exceedingly durable, prolong life, preserve metal surfaces and general appearance.

At the Yale & Towne Manufacturing Company, as shown in the accompanying photograph, vehicles receive a fast-drying primer coat, followed by the finished synthetic enamel coating, in only a half hour's time. In another hour the vehicle is ready for final trim.

Spruance primers and enamels play an important part in beautifying and protecting the products of many nationally-known manufacturers.

Invite Spruance to solve your particular finishing problems. No obligation.

THE GILBERT SPRUANCE COMPANY, PHILA. 34, PA. WINSTON-SALEM, N.C.



Prints metal, masonite or wood cabinets automatically. No jigs, no fixtures necessary. Uniform printing, no misprints. Human element eliminated. Quickly adjusted for various sizes. Cabinet held by air cylinders on inside, assuring a perfect, flat and square printing surface even when cabinets are made of thinnest material. Production-2 per minute on large, console models.

Wood

This machine is built in various sizes from the narrowest up to 98" wide, for the graining of various sizes and thicknesses of panels, tables and similar work. Can also be used for edge graining. Explosion-proof motor is mounted beneath a solid base, eliminating fire hazards.

This trademark SCHMUTZ recognized as builders of fine printing machinery since 1923.

This trademark is known not only in this country, but throughout the world for modern and highest quality printing machinery. Now manufacturing more than 60 different types and models.

VISIT OUR PLANT, SEE THE MACHINES UNDER CONSTRUCTION AND DOING ACTUAL WORK ON OUR TEST FLOOR.

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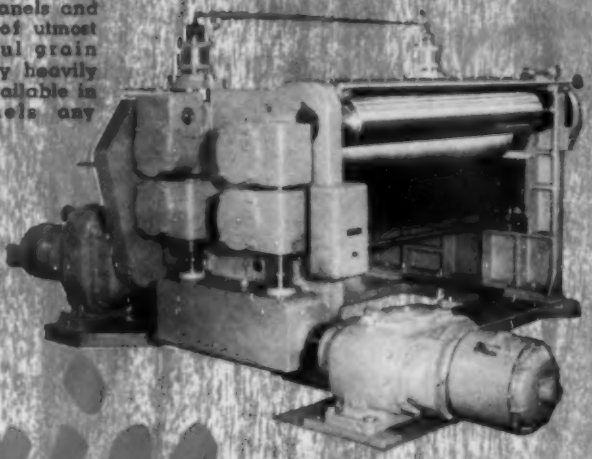
1600 W. MAIN ST.

LOUISVILLE 3, KY.

U. S. A.

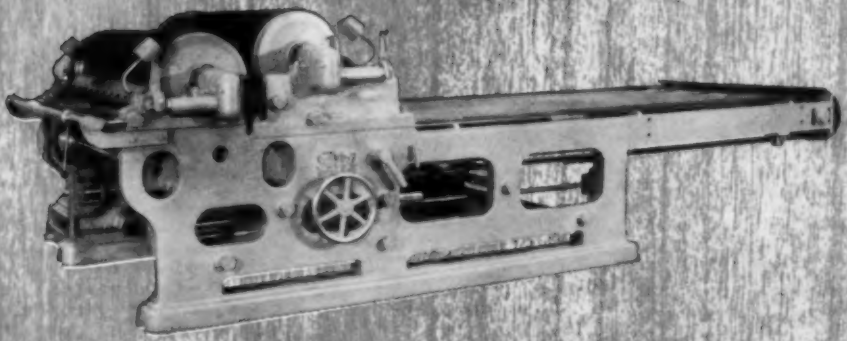
Reverse Roll Coater for eliminating imperfections in hardboard panels and other sheet material, which is of utmost importance in securing beautiful grain effects. These machines are very heavily and accurately built and are available in two sizes for 36" and 48" panels any length and up to 2" thick.



Grain

REPRODUCING EQUIPMENT

This large, heavy duty machine has been especially designed for printing unusually beautiful grain effects on large panels. Panels are automatically fed through the machine so that perfect registration of design can be had. Machine carries two sizes of engraved cylinders: 10" diameter for straight grain and 20" diameter where design of wood is such that repeating is objectionable. Standard size machines will handle panels 36", 48" and 84" wide, up to 12' long and from the thinnest to 2" thick.



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keep spray-booths clean with

"LIQUID ENVELOPE"

original, firesafe strip-coating

Spray it on. At clean-up time, strip it off, respray and you're back in production quickly. "LIQUID ENVELOPE" improves illumination, promotes fire-safety. Dry film will not burn or support combustion.

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H. & W. Chemicals, Rochester, N. Y.
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The Leonard Co., St. Louis, Mo.
Nelson Industrial Supply Co., Grand Rapids, Mich.
Mid States Industrial Corp., Rockford, Ill.
Vic Miner Co., Toledo, Ohio
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Plastic Paper Co., Los Angeles, Calif.
Protective Prod. Distributors, Hamburg, N. Y.
Raico Sales Co., Raleigh, No. Carolina
R. W. Renton and Co., Cleveland, Ohio
Hugh Russell & Sons, Ltd., Montreal, Can.
Sprayway Co., Los Angeles, Calif.
Supplee-Biddle-Steltz Co., Philadelphia, Pa. (Industrial Division)
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Industrial FINISHING

August, 1957, Issue

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INDUSTRIAL FINISHING Magazine for information about technical paint coating problems, methods and processes; and for sources of supply for organic finishes, equipment and supplies to be used in connection with surface preparation and conditioning, paint application, sanding, paint drying and baking, rubbing, polishing, etc.

Surfaces to be completely or partially coated for protection, decoration or for any other purpose, include components and articles made of metals, plastics, woods, and composition materials; also paper, leather, rubber and fabrics.

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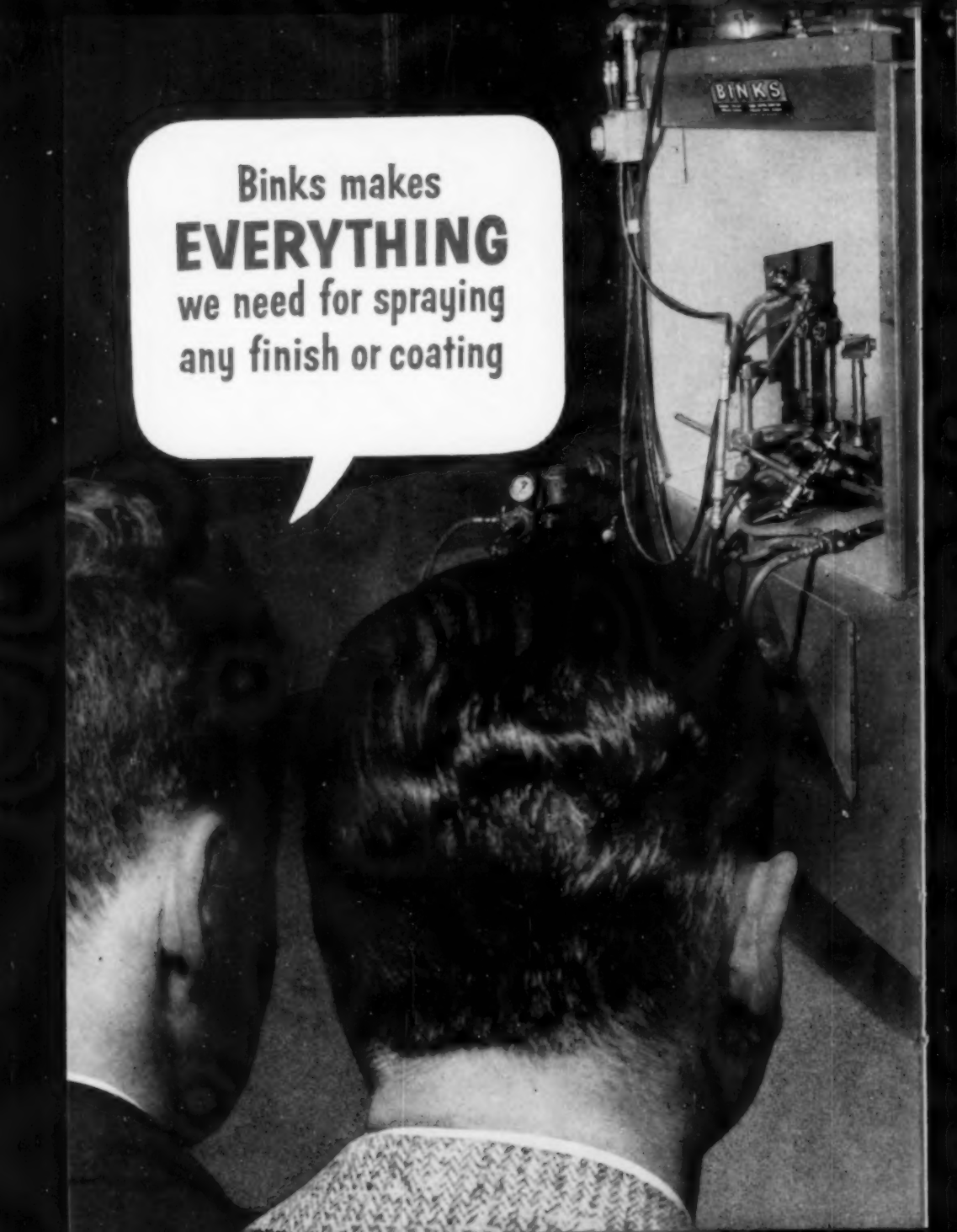
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You save on production time, you prevent loss of material and you improve the quality of your finish when you use Young Brothers Ovens. They are engineered and built to meet the most exacting requirements and are backed by more than a half century of experience devoted to the development of Batch and Conveyor Ovens for new processes, materials and products.

A wide variety of standard and special Young Brothers Ovens are available to meet your specific needs for baking and drying Enamels, Lacquers, Japans, Varnishes and other finishes. For better finished products in less time, at lower cost, investigate the advantages of Young Brothers Ovens. Our engineers are available for consultation without obligation. Write for Bulletin 4 today.

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• **New DURACRON** can also be used advantageously on many other products to improve performance of enamels now used. We'll gladly provide you with additional information. Mail coupon below to Pittsburgh Plate Glass Company, Industrial Finishes Division, 1 Gateway Center, Pittsburgh, Pa.

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Gentlemen: Please send me additional information about your revolutionary new DURACRON.

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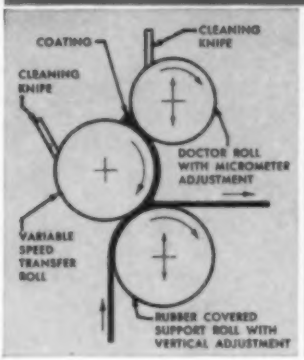

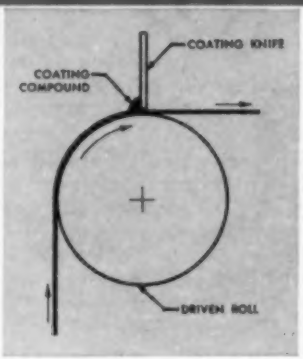

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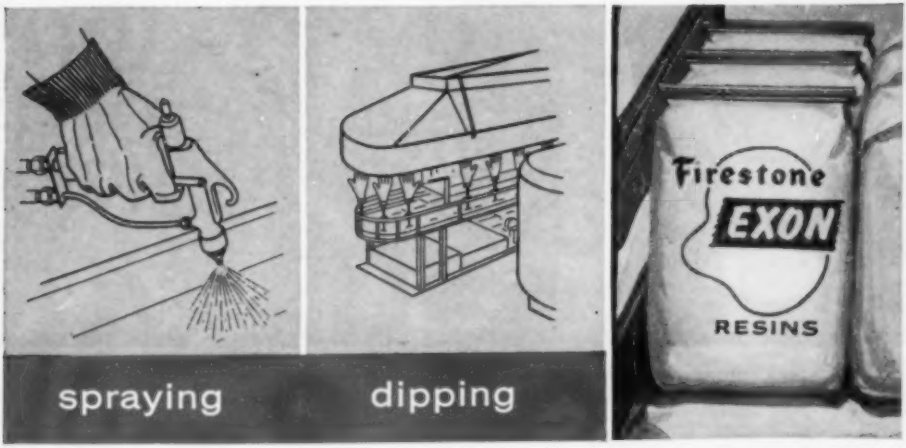

Methods of applying protective coatings vary and Firestone has engineered 6 Exon solution resins to meet the special needs of each type of application.

Each Exon solution resin differs in solubility and adhesion to fit the precise requirements of various solution coatings. Each is resistant to chemicals, abrasion, corrosion and weather. Each dissolves quickly in appropriate solvents.

No wonder more manufacturers of solution coatings turn to Firestone to solve their problems. Consider your own. Then, for the solution resin with properties pin-pointed to the best answer for you, check with Firestone.

Here Are 6 Solution Resins Engineered for Successful Coatings

EXON 450 For low cost strip coatings. Good solubility, tensile strength and durability.

EXON 461 A unique fluorine-containing resin combining high solubility, unusual chemical resistance, heat stability and weatherability.

EXON 470 Excellent adhesion to metals, alkyd, vinyl surfaces. Compatible with wide range of drying oils, alkyds, phenolics, melamines. High solubility in low-cost solvents.

EXON 471 Excellent for weatherability and durability in a protective coating. Corrosion resistant.

EXON 481 Makes possible high strength colorful, abrasion-proof, coatings that resist fading or cracking.

EXON 485 For superior strip coatings. Lower viscosity makes application easier and shelf-life better. Good clarity.

For complete information and technical service, call or write:

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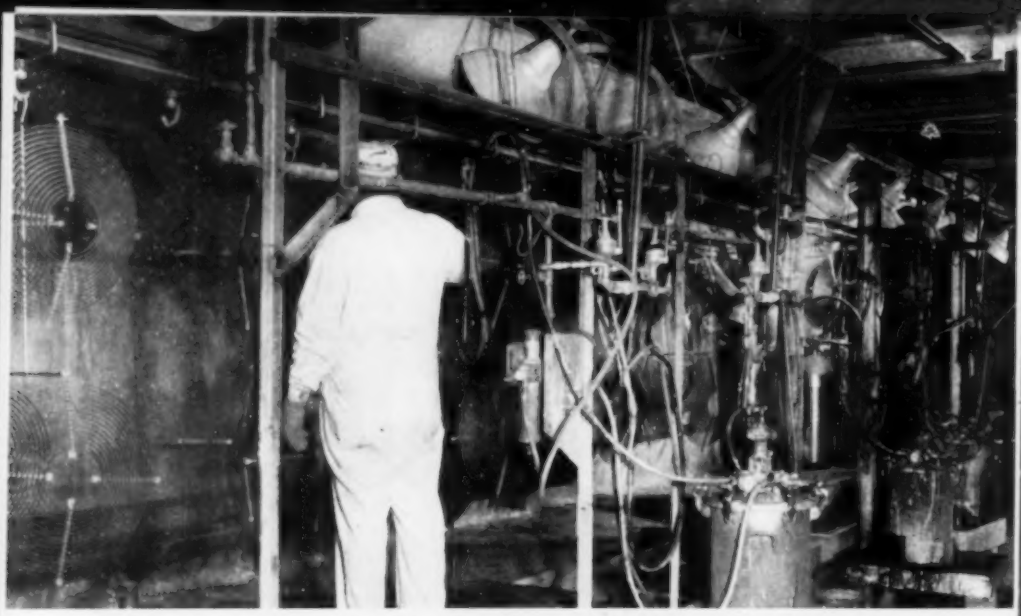


Here you see carefully controlled spray painting of spiral-shaped fan guards as they travel by conveyor through a water curtain spray booth. Notice particularly that there is no evidence of excessive overspray in the spray painting of these open-work parts.

A Production Setup For *Spraying Spiral Guards*

BY WILLIAM C. PHELPS
Plant Engineer*

WE MANUFACTURE and apply coatings to a variety of metal products, including parts for refrigerators and electric fans. Some are large; others are small.

On some concealed parts, only a protective coating is required; on others a real high quality finish is specified.

We have facilities for using practically every method of paint application. Each new product is carefully studied before it is put into production, to determine the method of coating or finishing that appears to be most suitable from the standpoint of quality, safety and economy. Next comes the matter of work holders or fixtures. These must be designed to hold a reasonable number of pieces, de-

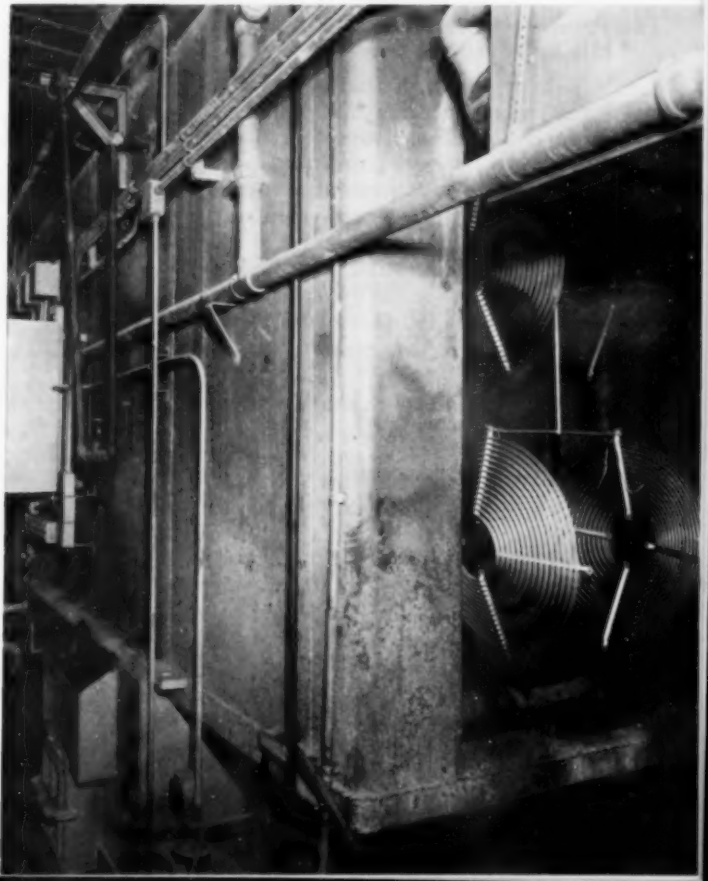
*William R. Bootz Mfg. Co., Inc., Evansville, Indiana.

Roller coating before forming wouldn't do because the parts were to be welded later; and flow coating or dip coating wouldn't give us the perfect finish that was necessary for this particular product.

pending upon the type, size, shape and weight of the product, and to correctly position each piece according to the method of coating or finishing to be used.

Coiled Guards for Fans Present A Problem

Some products lend themselves readily to a routine method of paint application; then there are others that are just hard to finish by any method. For example, spirally wound fan guards would fall into the latter category. These guards I have in mind are 22-in. in diameter, and produced in two types. One is made of a continuous round wire of .135-in. diameter; the other is formed from a continuous flat strip ½-in. wide and .050-in. thick. Both are made of



A work holder carrying four spiral-shaped fan guards enters the power washer. Note how the guards are tilted and slightly offset on each side of the fixture.

cold rolled steel. The wire and the strip cannot be coated before they are spirally wound and fitted into the frame because, after having been cut and fitted, both types of guards are welded to the frame.

These guards cannot be satisfactorily flow coated or dipped because, even though a solvent vapor drain is in service back of the flow coater or dip tank, the excess paint clinging to the slender metal will not drain properly due to the shape and construction of the guard. To obtain the quality finish demanded for these guards we have found it desirable to coat them by spraying.

Products Positioned to Minimize Overspray

Now we all know that even when spray painting solid flat surfaces there is some loss from overspray. And when spray painting open-work guards, you would expect even more. However, by carefully designing our work holders and developing a certain kind of spraying technique, we have improved the spray painting of these guards to the point where we obtain reasonably good efficiency.

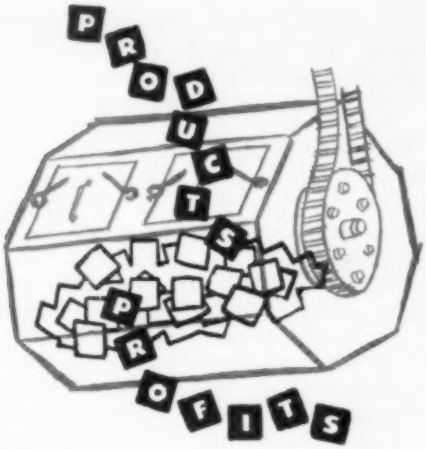
Each work holder is designed to hold four guards, two at each side and one above the other—something like two bicycles hanging vertically side by side. The guards are held firmly in a slightly tilted position, back to back. The two guards on one side of the fixture are slightly offset in relation to the two guards on the other side of the fixture. The slight tilt to each guard makes it easier for the operator to direct his spray at an efficient angle. This arrangement presents more solid surface area to the spray than would be the case if the operator directed his gun toward the broadside of the guards.

Of course, some overspray goes through the open spaces between the coiled wire or narrow strips, but all of this overspray is not lost. Some of it—in fact most of it—is deposited on the two guards at the other side of the fixture. The fact that the two guards (one on each side of the fixture) are slightly offset in relation to one another—this also presents additional solid surface area to the spray and aids in reducing the loss of paint through overspray.

The guards are placed on work holders in the fabrication department, and suspended from an overhead monorail conveyor. They move through a 5-stage power washer wherein their surfaces are cleaned and phosphatized. This phosphate coating increases the adhesion of any paint or other coating material and permanently protects the metal against rust.

Good Surface Preparation; Cleaning; Phosphatizing

In the first stage, an alkali cleaning solution, heated to 160° F., is sprayed on the work from four sides, at a pressure of 25-lbs. per square inch. Then follows a hot water rinse at 160° F. In the third stage an iron phosphate solution is applied at 160° F.; then comes a cold water rinse. In the last stage a chromic acid solution, heated to 130 ° F., is sprayed on. After leaving the metal washer the guards pass through a dry-off oven for



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PUT your products in the barrel
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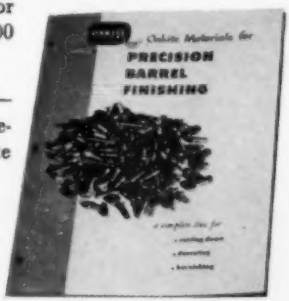
One of the greatest money-saving opportunities in metal-working lies in the use of barrels to finish parts by the hundreds in place of conventional methods that finish one part at a time.

Barrel finishing makes easy work of many tough jobs of grinding, deburring and buffing by wheel.

One Oakite customer changed to barrel methods to deburr curved stainless steel strips that are 14 inches long. The cost for deburring 20,000 strips was reduced from $3,000 to $125.00.



FREE For a copy of "*Precision Barrel Finishing*"—containing valuable information on cutting down, deburring, descaling, and burnishing—write to Oakite Products, Inc., 32F Rector St., New York 6, N. Y.

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OAKITE

SCIENCE

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seven minutes at 325° F. This forced drying is followed by a cooling period of eight minutes before the guards reach the spray booth.

Controlled Spray Painting; Baking; Cooling

Guards made of round wire receive a coat of green synthetic enamel. Flat strip guards are finished in a metallic white gold. The pressure tank containing the latter material is equipped with an air-driven agitator which operates continuously in order to keep the bronze powder in suspension.

To spray these guards we use an atomizing pressure of 45-lbs. per square inch and a fluid pressure of 15-lbs. These pressures were not arbitrarily set up. They are the result of much experimentation. Higher pressures than these will produce too much loss by overspray. If lower pressures are used, an insufficient amount of paint will carry through the guard being sprayed to coat the guard on the other side of the fixture.

The fixtures are mounted on a swivel so that the operator can easily spray the guards from both sides, but the carry-through of paint is essential for complete coverage.

The top coat of finish is allowed to flash (air dry) for 15 minutes before it enters a gas-fired convection oven where it is baked for 25 minutes at 315° F. Upon leaving this oven the guards travel for five minutes to cool; then they are removed, inspected and wrapped for shipment.

Duggan Masking Devices Opens Larger Plant in Detroit

The Duggan Masking Devices now occupies its new and larger plant and offices at 7075 Lyndon Ave., Detroit 38, Michigan.

Composed of approximately 20,000-sq. ft. of office and factory devoted to the production of special and standard "Selective" spray painting, plating and abrasive blasting equipment.

The company also takes this occasion to express its appreciation for the past pleasant relations with all business contacts and to assure improved service and quality with these new and larger facilities.

Dow Chemical Sales Up

The Dow Chemical Co. reports record sales of $627,819,059 for its 1957 fiscal year which ended May 31. This represents a gain of 11% over the previous year's sales of slightly more than $565 million. Approximately $7 million of income from other sources brought the company's total income to $634,685,548.

Duggan Masking Devices' new and larger plant and offices at 7075 Lyndon Ave., Detroit.

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CORROSION-RESISTANCE, PAINT BASE ON ALUMINUM AND MAGNESIUM

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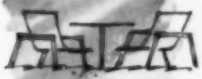

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LOWEST COST—You have only minimum equipment cost, no special racks, high speed operation, lower overall handling costs.

CHOICE OF APPEARANCE—Clear coatings that retain metallic lustre to dark, maximum protection coatings. Dyes available, too.

IRIDITE #14 and #14-2 (Al-Coat) for ALUMINUM—Both provide excellent corrosion protection and paint base. Iridite #14-2 is an improved product that allows greater flexibility in operation and coating thickness and produces the optimum in corrosion protection. Either coating provides corrosion resistance superior to complicated electrolytic treatments in a fraction of the time. These coatings also have low electrical resistance, aid in arc-welding, provide a good base for bonding compounds, have no effect on the dimensional stability of close-tolerance parts. Choice of appearances ranging from clear through yellow iridescence to full brown. Red, green, blue, orange or yellow dyes available.

IRIDITE #15 (Mag-Coat) for MAGNESIUM—Produces a protective, paint base film with corrosion resistance at least equal to long, high-temperature dichromate treatments in a fraction of the time and at room temperature. Appearance can be varied from light brown to dark brown and black.

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West Coast Licensee—L. H. Butcher Co.

BY C. C. BARBERA
Maas & Waldstein Co.

Problems in Connection With FINISHES for PLASTICS

WHEN endeavoring to formulate coatings for plastics, many problems are to be considered. This article will describe some of these problems and point out the variables involved which make it necessary to "custom make" the coatings for each plastic concerned.

Most plastics can be generally classified under one of two major groups—thermosetting or thermoplastic. Here we are concerned with the thermoplastic type used for molded articles such as cellulose nitrate, cellulose acetate, cellulose acetate butyrate, acrylics and polystyrene. We will refer to these plastics as the "solvent-sensitive" type to differentiate them (for coating purposes) from "solvent-resistant" thermosetting types.

It is beyond the scope of this article to describe all properties of each plastic and point out why certain plastics are chosen for specific applications. Most readers realize that such properties are moldability, insulating characteristics, flexibility, durability, impact resistance, etc., and economies involved —all govern the choice of plastic for any specified job. Suffice to say that it is the coating formulator's job to produce the coating after a choice has been made, therefore he is concerned with these properties only as they may affect the coating.

Why Plastics Are Painted; Many Conditions to be Met

What are the reasons for coating these plastics? The same as for coating other materials—to apply or change the color, change the gloss, obtain special or decorative effects, meet durability requirements, etc. From an economy standpoint, it is often advantageous to mold articles without any color requirement and thus apply the color or colors, as necessary, in the form of sprayed-on finishes. Finishes for plastics encompass the same general problems as most other industrial finishes, such as pigment dispersion, hiding, sprayability, color matching, color bleeding, etc.—and, in addition, they introduce some distinctive problems of their own.

Let us see why finishes for these plastics are so unique that they require special treatment? First of

ACETATES Amyl, Normal Butyl, Secondary Butyl, Ethyl, Isopropyl, Normal Propyl

ALCOHOLS Normal Butyl, Secondary Butyl, Isopropyl, Methanol, Proprietary Ethyl Alcohol, Normal Propyl

ALKALIES Caustic Soda, Trisodium Phosphate

ALKANOLAMINES Diethanolamine, Di-Tri-Isopropanolamine, Monoethanolomine, Monoisopropanolamine, Triethanolomine

AROMATIC SOLVENTS Benzol, Toluol-Xylol, Heavy Aromatic, SC Solvents #1, 2, 3, 28, 100, 150, and 450

CHLORINATED HYDROCARBONS Carbon Tetrachloride, Chlorothene, Ethylene Dichloride, Methylene Chloride, Orthodichlorobenzene, Perchlorethylene, Propylene Dichloride, Trichlorethylene, Trichlorobenzene

ALL UNDER ONE ROOF

to give you fast, convenient service

GLYCOLS Diethylene, Dipropylene, Ethylene, Propylene, Triethylene, Tripropylene

KETONES AND ETHERS C. P. Acetone, Diacetone, A.F. Methyl Acetone, Methyl Ethyl Ketone, Methyl Isobutyl Ketone, Ethylene Glycol Ethers, Propylene Glycol Ethers

NAVAL STORES Dipentene, Pine Oil, Turpentine, Gum & S.D. Wood, Rosins, Gum & Wood, Modified Rosins, Resinates

ALIPHATIC-HYDROCARBONS Heptane-Hexane, Mineral Spirits, Odorless Mineral Spirits, Benzene (VM&P) and other standard and custom Aliphatic-Naphthas.

OILS AND FATTY ACIDS Linseed Oil, Tallol, Tallol Fatty Acids

STEARATES Aluminum, Barium, Calcium, Iron, Lead, Manganese, Magnesium and Zinc

WAXES Emulsifiable, Dip Wax, Paraffin, Plastic Waxes, Sugar Cane Waxes

OTHER PRODUCTS Plasticizers, Weed Killers, Anti-Freeze, Chlorinated Paraffin

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"Harry, why did the boss switch to Dow Trichloroethylene?"

"That's simple, Jess—he figures it does a better job."

"In what way?"

"High solvent power, high stability. Superior degreasing performance thoroughly removes oils, tars and resins. Special inhibitors keep it stable after repeated degreasing and distillation runs. All around high quality."

"Nothing low down about this solvent, eh, Harry?"

"On the contrary. Relatively low boiling point makes it easier to handle the work after degreasing. And the narrow boiling range indicates the purity of the solvent."

"Sounds like it will do a good job."

"That's right, Dow Trichloroethylene does a good cleaning job and is safe to handle, too. Classified as nonflammable and nonexplosive at ordinary temperatures. Doesn't produce a flash by either the closed cup or open cup test."

"Say, Harry, sounds like you're selling this stuff."

"I'm not, but Dow is."

"Who?"

"Dow. Same people who sell Dow Perchloroethylene Industrial for vapor degreasing, Dow Methylene Chloride for stripping and Chlorothene® for cold cleaning. THE DOW CHEMICAL COMPANY, Midland, Michigan."

YOU CAN DEPEND ON DOW

all, these plastics are the only type of substrata on which there may be a dissolving action by the solvents present in the coating to be applied. This condition to be met necessitates a dual approach to the problem. The formulator must keep in mind the solvents to which he is restricted, and at the same time choose film formers and modifiers soluble in these solvents which will give the necessary performance requirements. Secondly, these plastics require air dry type finishes, as they are softened by the application of heat.

Solvent Action or "Bite" Varies on Different Plastics

Some solvent action or "bite" on the plastic is necessary for good adhesion of the coating, but this solvent action must be "buffered" by use of the proper amounts of non-solvents for the plastic in order to prevent attack of the plastic to the point of distorting or crazing the surface. It follows then that each kind of plastic requires a different solvent blend which not only must aid adhesion and prevent crazing but allow for proper flow out and homogeneity of film.

Thus far we have seen the general problems associated with these plastics. Let us now look at some of the individual properties peculiar to each plastic.

Cellulose nitrate (celluloid). This is the toughest of all the thermoplastics, but probably one of the least used for molded articles because of its high thermoplasticity which makes it necessary to chill the mold before the article can be removed. Camphor, an excellent solvent for cellulose nitrate, is the usual plasticizer and shows no tendency of plasticizer migration (see below). Cellulose nitrate is soluble in ketones, esters and alcohols and is unaffected by aliphatic and aromatic hydrocarbons and chlorinated hydrocarbons. The plastic displays little susceptibility to crazing.

Cellulose acetate. A discussion of coatings for this plastic cannot be complete without including a brief description of the term plasticizer migration. There appears to be a movement of the plasticizer within the plastic itself, into the surface coating, causing the coating to become soft, especially under conditions of high humidity.

Plasticizer migration seems to occur frequently in cellulose acetate plastic, according to the amount and type af plasticizer used. It is probably due to the poor solvency that the plasticizer has for the plastic. The plastic does have generally poor compatibility and solubility. Thus relatively large amounts of plasticizer are required to obtain flexibility. When the plasticizer migrates, it enters the surface film for which it may be an excellent solvent and softens it. It follows that coatings for cellulose acetate plastic must be formulated so as not to be softened by these migrating plasticizers.

Cellulose acetate is soluble in few solvents, notably low molecular weight esters and ketones so that this limited solubility reduces chances of crazing. The plastic is not soluble in butyl acetate and hydrocarbons which may be used as "buffering agents." [*To page 44*]

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Cellulose acetate butyrate requires much less plasticization than the straight acetate as it is inherently more flexible. It is also compatible with and has better solubility in a greater number of plasticizers, thus further reducing danger of plasticizer migration. It is similar to cellulose nitrate in its solubility and toughness, but is more widely used because of its better molding characteristics. It can be coated satisfactorily with most lacquers.

Acrylics. Properties of this plastic depend on the monomer or polymer of acrylic or methacrylic acid that is used to obtain desired properties, therefore there is no additive plasticizer to worry about. Among the solvents in which acrylics are soluble, there are the esters, ketones and aromatic hydrocarbons. There is little tendency of crazing, and lacquer-type coatings can be used with good results.

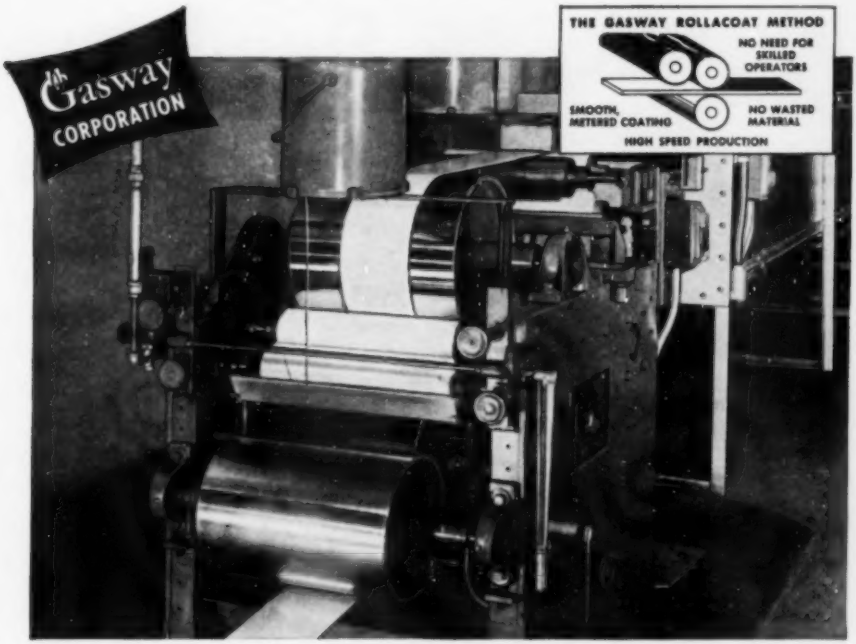
Polystyrene. This material is among the lightest of plastics in unit weight and has excellent moldbility. This characteristic makes for good economical output which probably accounts, to a great extent, for the large volume of molded articles made of polystyrene. These and other outstanding properties are the reasons why the coating formulator is called upon to make more finishes for polystyrene than any other plastics.

As luck would have it, however, this plastic provides more problems than any other plastic. It is easily attacked, to the point of surface wrinkling or crazing, by almost all organic solvents with the exception of the alcohols and some aliphatic hydrocarbons. It is especially sensitive to the aromatic hydrocarbons. This extreme solvent sensitivity is a big obstacle in that the choice of film formers and modifiers becomes limited.

Different grades of polystyrene will tolerate different amounts of active solvents before crazing, and even some sections in the same mold will craze more easily than other sections, due to the difference in stresses on the surface of the plastic.

To further complicate matters is the fact that mold release agents are often used—either incorporated into the plastic itself or applied on the face of the mold. These mold release agents act as lubricants and are usually oils, waxes, silicones or metallic soaps, all of which are mortal enemies of good adhesion—between the plastic surface and any coating that is applied thereto.

Let us also note that within each type of plastic there are countless variations or grades developed by different manufacturers for specific properties. These properties are obtained by varying the ratios or changing the type of filler, extender, plasticizer, hardener, lubricant, color and special additives, etc. These variations can and do produce differences in solvent sensitivity and could also alter the film performance of any coating used. With all of these variables in mind it can be readily seen why coatings are formulated for each plastic. It also follows that for best results, the formulator must be supplied with specimens of the plastic to be coated, not only for formulation purposes, but for testing the performance requirements of the coating.



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Here's how KoolVent Metal Awning Co. is controlling manufacturing costs and getting a better product, with its Gasway Continuous Strip Coating Line.

For example, KoolVent estimates that *paint consumption is approximately 33%* of what it was before the company installed its coating line. *850 square feet of aluminum is covered with one gallon of paint!* In addition to these savings, *KoolVent can and does coat an average of 8500 pounds of aluminum stock per 8 hour shift.* This is possible because the Gasway line produces 75 feet of enameled and baked strip per minute.

The manufacturing advantages don't stop with the painting either. KoolVent roll-forms its awning parts after coating. This is the last step in the manufacture of the parts. Assembly of the awning is the only thing left to do. The only handling done during manufacture is handling of coiled stock. The automation in finishing and forming operations increases efficiency, and also cuts costs significantly. *Get all the details today!*

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DeVilbiss-resists

DeVILBISS PAINT HOSE

DeVilbiss synthetic-compound liner lasts indefinitely, because it is specially formulated to withstand all solvents.

ORDINARY PAINT HOSE

Ordinary hose, with rubber-composition liner, soon deteriorates from active solvents present in all paint materials.

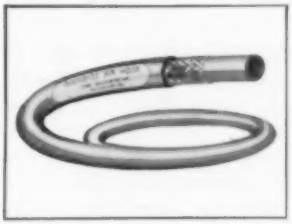
made paint hose solvent action longer

"Torture" tests, the most conclusive known for solvent-hose analysis, prove the superiority of DeVilbiss hose.

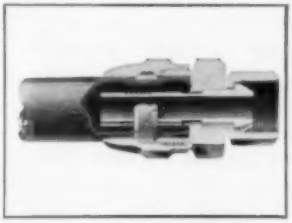
Fluid liners from DeVilbiss and other brands of paint hose, when exposed to the prolonged solvent action of common paint thinners, tell the story. The DeVilbiss liner shows no sign of deterioration, while others show marked changes from the effects of turpentine, acetones, ketones, acetates, toluol and other hydrocarbons – proof that DeVilbiss hose outlasts other makes in operations where paints are conveyed.

This laboratory evidence is your assurance of longer protection against hose-liner disintegration, swelling, and plugging – against paint contamination and discoloration!

Next time you order, specify DeVilbiss-made hose. Not only does it resist solvent action better, but also, it is manufactured to closer dimensional tolerances . . . and is produced in a specialized DeVilbiss Rubber Plant, where the requirements of quality hose for spray painting have been a scientific study for over 40 years.



DeVilbiss' new oil-resistant air hose is specially compounded for long-lasting service with air tools that require lubrication through the air stream.



DeVilbiss hose connections fit all common sizes of all types of air and fluid hose; provide a smooth, tight-grip, leakproof connection; are reusable.

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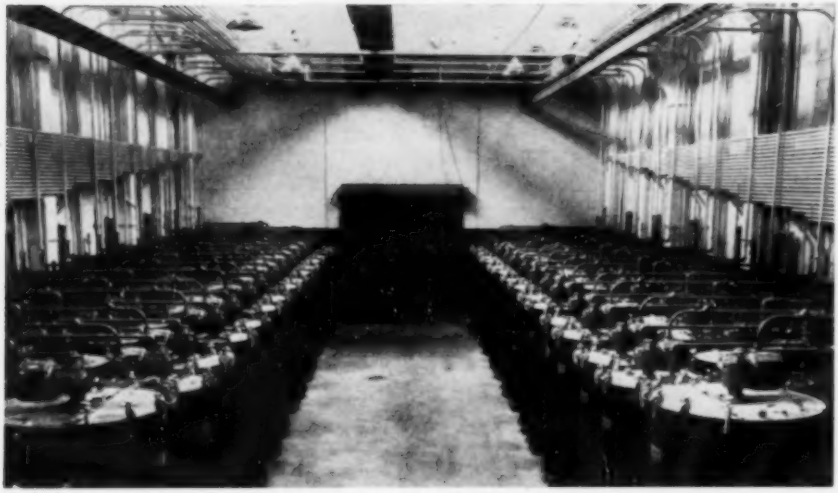

Paint Circulating Systems

BY FRANK L. WHITTEN

THE USE OF a modern paint circulating system permits lower operating cost and the delivery of more material faster—and it is practical in small as well as large installations. Every feature — economy, safety, material control and the convenience of low cost material handling—is now available to small manufacturers who, up to now because of limited production, were unable to justify such an investment.

For many years paint handling costs have been reduced and output has been increased by manufacturers having large volume finishing operations, through the use of the paint circulating system. Some of these systems were costly due to the engineering involved. They were designed, built and installed to meet certain conditions under which each finishing department operated. Since the introduction of modern type material handling pumps, which will move paint from the original container to the spray gun, the advantages of paint circulating systems do not need to be confined to large users of paints or coating materials.

Controlled delivery of material to the spray gun is quite important due to the cost of material sprayed by each gun in the course of a day. For complete control of the delivery of material to spray guns or to other application equipment and operators (where 30 gallons or

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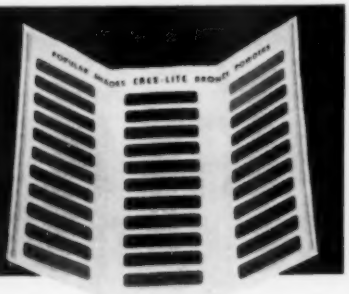

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more of one kind of material are used in a day) a paint circulating system will help to increase production efficiency and reduce paint handling costs.

Better Control and Handling Of Finishing Materials

To provide equipment and methods by which better and more economical finishes can be applied, manufacturers have continued to develop and promote the use of new material handling facilities. Also, there is more extensive use of the new processes, such as electrostatic, mechanical automatic, steam spray, heated material equipment, airless atomization, and other low pressure systems.

Along with this new equipment designed to decrease unit cost and increase product appearance, paint manufacturers are continually formulating new and improved coating materials. The installation of a paint circulating system can be used in conjunction with—and it probably will assist in the proper function of—the type of application equipment you are or may contemplate using.

Positive material control is important, and it is much easier to maintain when you are using a paint circulating system. The amount of control you desire will depend upon the type of product or surface being coated, the quality of the material, the application equipment, its adaptability for the work, its condition and adjustment, and the man responsible for operations. Material control in finishing operations includes: 1) Control of viscosities; 2) Mixing and delivery of paint that has been strained and uniformly mixed; and 3) Application of the paint with the proper balance of atomization and fluid pressures.

In every mixing room there should be a viscosity cup or some means of measuring the viscosity of paint before it is supplied to spray operators. Material control should be set up to hold materials at their proper viscosities, and to administer the type and quantity of solvents and thinners as recommended by the manufacturer of that material.

Viscosity; Mixing; Safety; Temperature; Cleanliness

Mixing control is important to prevent interruptions in production schedules. Interruptions are often caused by dirt and foreign material in the paint, use of improper solvents or thinners, not maintaining constant room temperature, and improper or inadequate cleaning of containers, strainers and other equipment.

The delivery of clean, fresh, uniformly mixed materials through pipe lines to spray guns, is important in successfully maintaining uniformity of product appearance. It eliminates the trucking of paint through the plant, prevents any mess around spray booths, makes possible a greater degree of plant cleanliness, and reduces fire hazards. There are no containers to clutter up the booths or to be cleaned and refilled. Each pipe line carries a different color or kind of material to the point of application.

Finishing material for the paint supply lines is put into mixing

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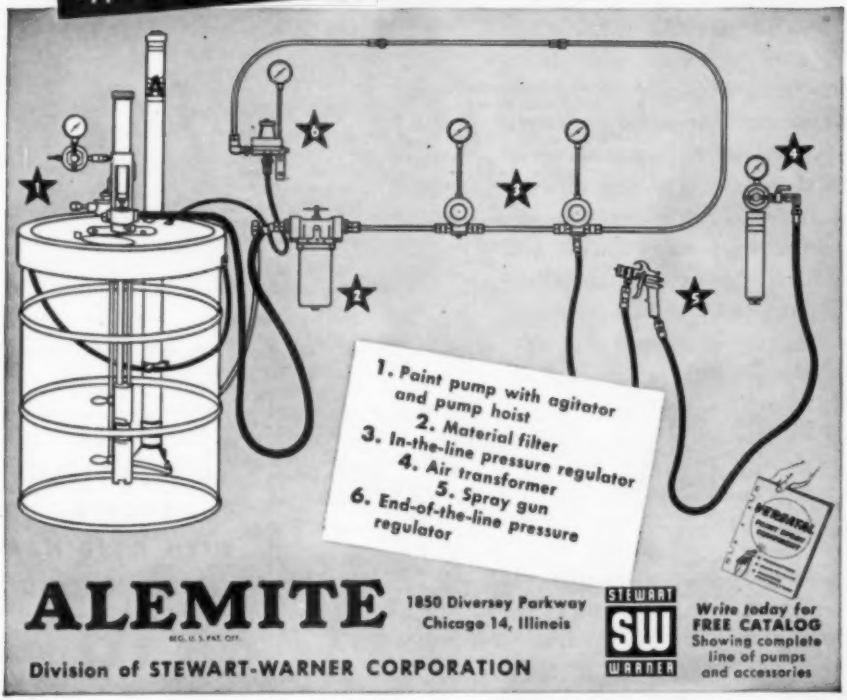
COMPLETE PAINT SPRAY SYSTEMS

FOR ALL SIZES OF PRODUCTION LINE OPERATIONS!

Typical Alemite Recirculating System Consists of:


1. Paint pump with agitator and pump hoist
2. Material filter
3. In-the-line pressure regulator
4. Air transformer
5. Spray gun
6. End-of-the-line pressure regulator

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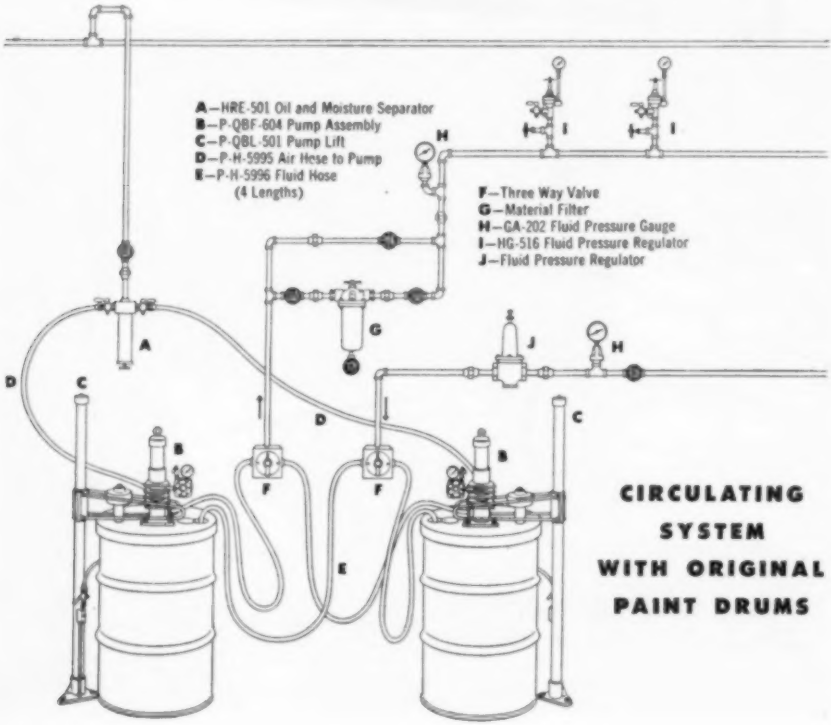
tanks, or left in the original container (depending upon which type of pump is used) in the central control supply room and thoroughly mixed by a power agitator. It is then drawn from the tank or container through the pump and on through a material strainer. It is circulated constantly, from the mixing room direct to spray operators and then returned to the mixing room. Regulated paint outlets are provided at each spraying station. Each fluid regulator is equipped with a fluid shut-off valve, and a fluid hose to spray gun is attached to the valve outlet.

Fluid Pressure Regulators; Spray Guns; Fluid Hose

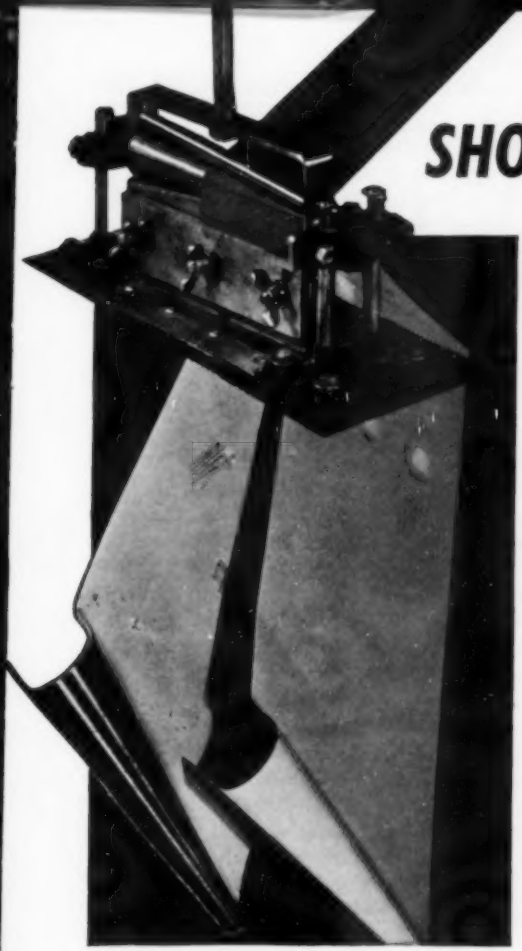
A paint circulating system with the proper type fluid pressure regulators installed at each spray gun outlet, is a positive guard against the fluid flow being tampered with by some spray operators. The fluid regulator key may be kept by the foreman or group leader, making it impossible for the operator to increase or decrease the fluid pressure. With this arrangement, positive control of material delivery is always maintained. Finishing material is delivered to spray guns at a uniform pressure, insuring even



CIRCULATING SYSTEM WITH ORIGINAL PAINT DRUMS

SHOCK TREATMENT

..bad medicine for the wrong finish



The conical mandrel test evaluates the flexibility and adhesion of paint on metal surfaces by severely bending and stretching a painted metal panel between conical rollers. Lowe Brothers FEUZON—baking enamel used on the right hand panel withstood this abuse without peeling, breaking or cracking. The competitive enamel on the other panel, could not stand this abuse.

You can't afford to use anything but the right finish. The second best might be cheaper and look just as good, but it will be more costly in the long run.

The "shock" will come after your product goes into home, office or plant. The finish must not only look good but also be able to take wear and abuse.

The "shock treatment," more severe than any encountered in actual service, is simulated in Lowe Brothers Technical Service Laboratory to determine in advance the reliability of each finish. The two test panels at the left which have been bent and stretched, graphically emphasize that the best paint is the most economical finish in the long run.

To make sure you get the right finish everytime, call or write Lowe Brothers Company, 424 East Third Street, Dayton 2, Ohio.

LOWE BROTHERS

INDUSTRIAL FINISHES

also Style-Tested paints for the home

application in proper thickness by each operator. When fluid control is adopted there is a considerable saving on each unit painted. Operators spray differently, and control is necessary for those who have the least ability.

Added savings are effected by less wear on the spray gun parts. Less wear occurs on the fluid tip and needle if the fluid flow is regulated to the spray guns properly and in such a manner that the operator can leave his fluid adjustment wide open on the spray gun, thus allowing the fluid needle to be drawn back out of the fluid tip opening while spraying. For the best control of material flow I prefer that the size of the fluid hose, from regulator to spray gun, be ⅜-in. inside diameter and 11/16-in. outside diameter. This size hose will permit sufficient material to be drawn from the system to the spray gun—and the hose is light and flexible, giving the operator easier control of his spray gun.

Constant Material Supply; No Settling out of Solids

The circulating system may be installed with a supplementary or a second pumping unit and mixing tank for each material. The reason for this arrangement is that when one container becomes empty, a quick turn of the control valve permits the drawing of material from the second container. Pipe lines and controls would be attached to a 3-way fluid valve to allow material to be pumped and/or returned to either container, or even from one tank to the other. This type of system also facilitates the cleaning of containers and changing from one material to the other.

Due to the nature of some coating materials, the separation of pigments, extenders and solvents from the solids has been a problem when using pressure tanks or other type dead-end material supply systems. The circulating system permits a constant flow of material; this helps to prevent any separation or settling out of solids which otherwise might not stay in proper suspension.

Because of the many variables involved, such as viscosity and fluid pressure, no pre-determined layout can be established in a circulating type installation. Various modificatons may be necessary where the size and length of pipe lines, loops or the number of spray stations exceed the maximum as stated by the manufacturer of material pumps. The engineering department of your supplier will be happy to submit special recommendations regarding such cases if requested to do so. For the benefit of a prospective user or anyone considering the installation of a paint circulating system, there are four basic types of equipment available, each one requiring a different type pump mechanism arrangement. A brief description of each would include mechanical data which may indicate the type of system most suitable for your requirements.

Small Circulating System; Agitation; Pumps; Materials

For a small circulating system, using a modified pressure-feed tank, the equipment would include

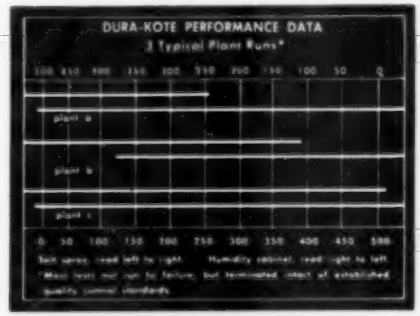
DuBOIS

PHOSPHATIZING BULLETIN

New Formula Dura-Kote Gives Excellent "Tooth" For Paint—Low Using Cost—No Dusting—No Sludging—Maximum Paint Adherence, Too

By Samuel J. Miller, *chemical director, The DuBois Co., Inc.*

Dura-Kote is the easily controlled, non-sludging, detergent-phosphatizer for cleaning and surface conditioning metal. Assures adherence of paints, enamels, japans and other organic finishes, particularly under severe conditions or where water, humidity, equipment or soil conditions have caused trouble with streaking or apparent rusting.


DURA-KOTE PERFORMANCE DATA
3 Typical Plant Runs*
plant a
plant b
plant c
0 50 100 150 200 250 300 350 400 450 500
Salt spray, read left to right. Humidity cabinet, read right to left.
*Most tests not run to failure, but terminated intent of established quality control standards.

Dura-Kote *cleans and phosphatizes in one stage.* The gray-bluish colored phosphate coating deposited by the Dura-Kote solution gives excellent "tooth" for paint. Should the painted object get scratched or gouged, Dura-Kote forms a corrosion barrier which stops rust spread. Paint films show maximum resistance in humidity cabinet testing.

Note the low use cost feature of Dura-Kote because of high square footage per pound yield of phosphatized metal. Works for long periods and is easy to control. *The bath works for many days* with simple one product additions to tank based chiefly on direct titration.

FREE DAILY CONTROL RECORD BOOK

Send a copy of DuBois Daily Control booklet for 3- and 5-stage phosphatizing operations, without obligation:

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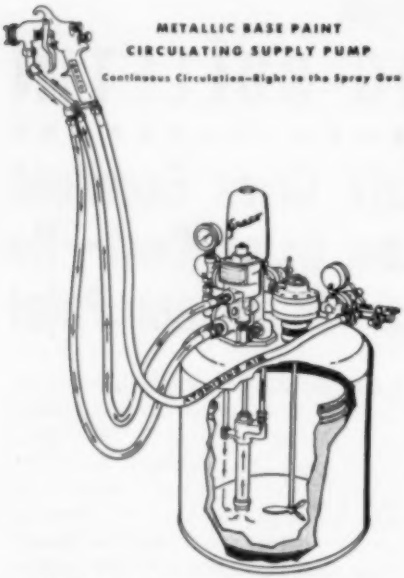


Agitates and pumps metallic paints.

a 30 or 60-gallon pressure tank, upon which a combination motor and agitator drive mechanism is mounted. The motor drives a small rotary pump for circulating the material through the hose lines and back into the tank. The unique and simple construction of the pump makes it adaptable to many diversified installations.

The only requirement for successful operation is the fact that the paint must be comparatively clean to prevent excessive wear on the close fitting parts. Furthermore, the fact that these are small direct driven rotary type pumps, and cannot withstand the wear of abrasive material, they are usually recommended for handling clear varnish, clear lacquer or other non-pigmented material.

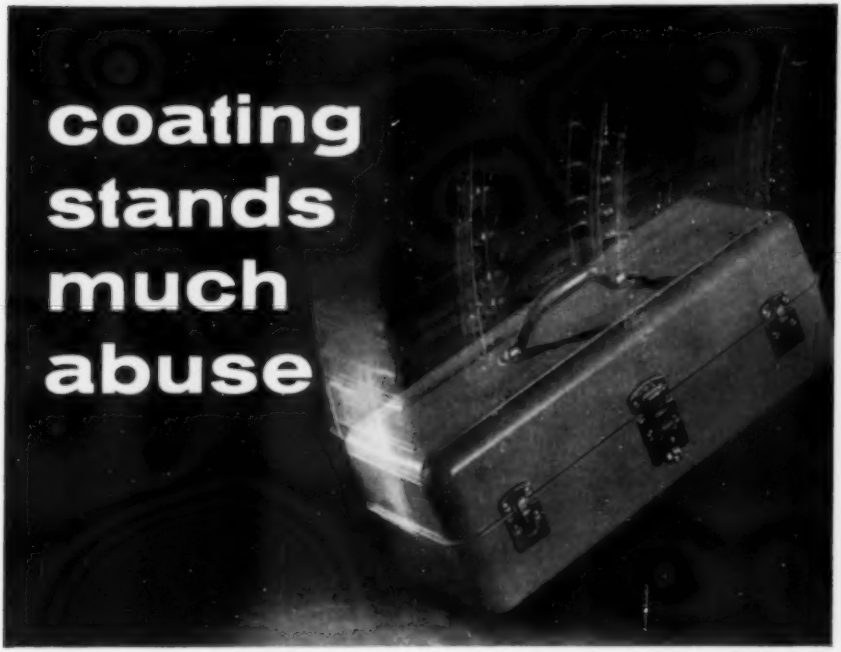
Due to the small capacity of the pressure type system, it is limited as to the number of guns (usually not more than one or two) and the material tank should be located close to the spray operation. As a precaution, it is recommended that a glass lined rotary impeller type pump be used for handling such materials as porcelain enamels, sand slurries and other abrasive mixtures.

Direct Drive, Rotary, Drum-Mounted Pumps

For a small operation (one and two spray station hook-ups) this type of pump can be used for a paint circulating system. It is efficient, economical and safe for delivering clear varnish, clear lac-

Pumps stirred-material directly from drum.

when it's UNICHROME *plastisol*



You can drop a coated product, even hit it sharply . . . yet nothing happens to the finish. Subject it to outdoor exposure, moisture, acids, alkalies . . . still no harm. *That's a Unichrome Plastisol Finish.*

Unichrome Plastisols are vinyl coatings with plenty of "give". They take physical abuse without chipping . . . corrosive service without peeling. They have appealing gloss . . . come in a variety of colors . . . apply by all usual production methods. Suggested uses: Any metal product that can be baked at 360°F, such as tool or tackle boxes, tanks, stools, business machines, carts, trays, etc.

Get details from Metal & Thermit, leader in development and production of plastisols.

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ORGANIC COATINGS
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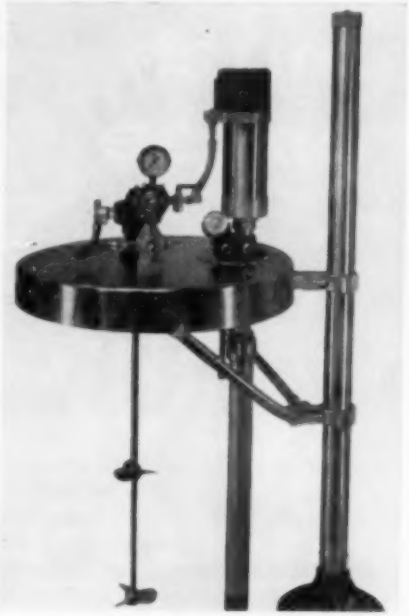
quer or other non-pigmented finishing material from shipping container to spray gun. A setup like this may be installed near the area of application. Pumps are available with either electric or air motor drive.

There is no method of agitating the material with this type of pump except for the small amount of agitation produced by circulating the material from the drum, through the hose, and then returning it to the drum. This small system is usually recommended for an operation where the spray booths are fairly close together, and where fluid lines are fairly short in length. The important feature of this system is that the material can be pumped directly from the original container or drum, thus reducing material handling costs.

Air Operated Piston-Type Material Pumps

Circulating systems that include an air-operated, piston type of material pump are becoming popular and are perhaps the least expensive to install and operate. The piston type pump for circulating paints or other coating materials is simple in design, and of trouble-free construction. Some of its merits are: Large capacity, the pump is fast, it delivers material with uniform flow and pressure, it is fully adjustable and it supplies numerous guns with ample volume for fast production.

The pump may be mounted in the original drum or container (on a 55-gallon drum with a 2-in. bung and vent hole type or with open top) or in other type mixing tanks, or in a stand-pipe installation. Other models deliver from a convenient 10-gallon tank in which a 5-gallon pail can be placed when desired. This arrangement would eliminate any needless handling and transfer of material; it cuts down spillage and waste of material, and avoids interruptions and delays for frequent refilling of pressure tanks or small containers.



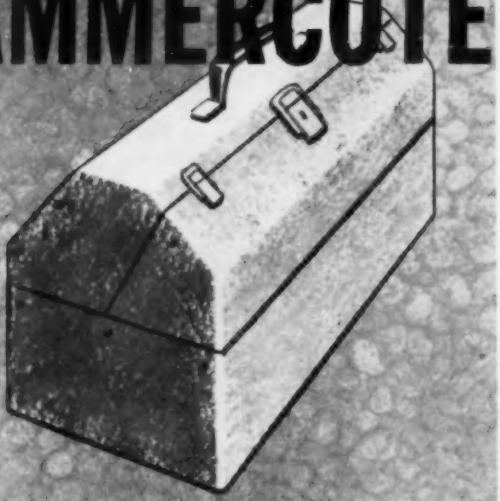
Air operated piston type pump with lid to fit open top drum, an agitator for mixing the material and an air lift for quickly changing the pump from drum to drum.

A piston-type pump is economical to operate and maintain. It operates from compressed air, requires no electric wiring, creates no fire hazard around any type job, involves no hazard due to a weak-

TOUSEY'S

NEW HAMMERCOTE®

for production touch-up without discoloration...



No longer is it necessary to completely refinish large painted pieces that become scratched or gouged in production. The old problem of discoloration on patched surfaces has been minimized with Tousey's NEW Hammercote.

Here is a finish that can be sprayed on the marred surface, the whole piece rebaked and the newly patched area match the twice baked part so closely it would take an expert to see the difference.

We invite you to make a patch-match test on your products with Tousey Hammercote.

TOUSEY PRODUCTS

DURACOTE for DURABILITY

TOUSEY VARNISH COMPANY

520 West 25th Street • Chicago 16, Illinois • Victory 2-2200

ened drum because there is no air pressure in the drum or container. With some models the air consumption required to deliver a large volume of material is very low, even to operate as many as 12 spray guns with 1000-ft. of straight ¾-in. pipe. Note: If elbows, extra valves and several feet of rise are needed for the installation, adjustment of this length must be made accordingly.

Check With Supplier and Your Local Industrial Code

Before you purchase a pump of this type, it is suggested that you check with your equipment supplier to make sure that the pump is recommended and designed for circulating paint. It is important that you get a uniform flow and constant pressure, without pulsation, for controlled finishing operations.

These pumps are available with additional accessories such as air pressure regulators for pump control, automatic oiling devices, drum lids for use with open top drums, air motor agitators and an air lift for quick and easy changing of the pump from an empty to a full drum of material.

If your engineering department, local industrial code or insurance regulations should require separation of your spray operations from your paint mixing and supply room, a circulating system using this type of pump could be installed in a separate material supply room or housed in a fireproof enclosure. The material supply room could be located either within the same building or in a small building nearby, and the paint could be circulated through pipe lines and to the spray stations.

Large Capacity Pumps For Volume Users

An efficient method of handling paint for any plant that has a continuous volume of product finishing would be a system that includes high volume capacity pumps. Each installation of the paint circulating system is designed, built and put in to meet the conditions under which the finishing department operates.

A large permanent type installation will consist of a heavy duty, gear driven rotary pump, designed and built for a great amount of material delivery. For an installation involving the use of abrasive material, specially designed pumps are available, perhaps with glass lined casing to withstand the unusual wear. The mixing and supply tanks are specially built for the most efficient operation and convenience in filling and cleaning.

All production line requirements are considered and the circulating system is planned so there is no possibility of it conflicting with existing plant methods. In fact, it is designed and arranged so that production may be accelerated. All of the advantages of mixing and material control are incorporated in this type of system. Due to the amount of equipment involved, it is usually installed in a separate mixing and material supply room.

The supplier of this equipment will furnish a sales engineer to check your production requirements and make the necessary

FREE *new* BOOKLET *tells how to get* BETTER PAINT ADHESION

MAIL COUPON TODAY

TURCO PRODUCTS, INC.
6135 South Central Ave., Los Angeles 1, Calif.

Please send me your free phosphating booklet and ready reference chart.

NAME_____

TITLE_____

FIRM_____

ADDRESS_____

IF

Complete PHOSPHATING Reference Chart Includes:

- Description of phosphating
- Diagram of how phosphating holds paint to metal
- Illustrations of what phosphating can do
- Types of coatings available
- Recommended uses
- Applicable Government Specifications
- Methods of application and equipment requirements
- Metals to be used on
- Coating weights
- Detailed operation cycles

Here...in the free Turcoat phosphating booklet...is the best solution to any paint adhesion problem. This new booklet describes the *complete* line of Turcoat materials—the coating compounds that assure *permanent* paint adhesion, slash rejects, require less complicated controls and are more economical to buy and use.

Only Turco offers a truly full line of government approved coating materials for use in *any* conceivable processing set-up prior to the use of organic finishes. Only Turco offers a staff of 160 technically trained representatives located in all parts of the country to give immediate 'round-the-clock service. No wonder Turco is adding new phosphating accounts at a phenomenal rate. There are many reasons why, when it comes to *paint adhesion*, more and more industrial concerns are turning to the Turcoat line. The Turcoat booklet lists them all.

Offices in all Principal Cities

TURCO

TURCO PRODUCTS, INC.
Chemical Processing Compounds
6135 SOUTH CENTRAL AVENUE, LOS ANGELES 1, CALIF.

Factories: Newark, Chicago, Houston, Los Angeles, London, Rotterdam, Sydney, Mexico City, Naha (Okinawa)
Manufactured in Canada by B. W. Deane & Co., Montreal

recommendations. The correct size of pipe lines and bends with ample radius (no pipe elbows are used) are recommended to prevent any possibility of restriction or drop in fluid pressure; and to prevent any clogging or back pressure in the paint lines.

The number of regulators and controls with material filters are supplied to assure trouble-free operation of the entire circulating system. Mixing tanks, circulating and return lines, pumps, controls and filters are installed in a neat and clean manner so they will not detract from an orderly plant appearance, nor hinder the person responsible for the material supply room.

As heretofore indicated, the size of the installation and type of equipment to use will depend on the amount of material, number and quantity of colors, and the degree of positive control you expect to maintain over the finishing department. The size of the installation required will then help in determining the proper type of pumping equipment needed for your circulating system.

DeVilbiss Moves N. Calif. Branch to San Jose, Calif.

In another step to provide better service for its West Coast customers, the DeVilbiss Co. has moved its direct factory branch facilities for Northern California from Santa Clara to San Jose.

The move follows on the heels of the establishment of new branch facilities in Los Angeles to serve Southern California and Arizona, and the establishment of enlarged sales-service headquarters in Seattle for the Pacific Northwest, and at Salt Lake City for the Inter-Mountain area—all designed to better serve the continued growth of the west with the company's finishing equipment.

The Northern California headquarters is housed in a new, modern building at 1335 N. 10th St.

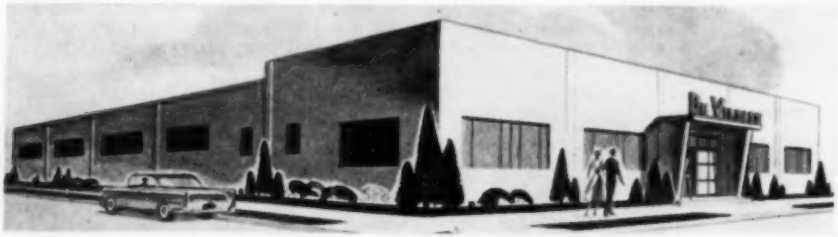
Full facilities for sales, service, engineering, repair and exchange and inventory are maintained in the new building which has more than 10,000-sq. ft. of floor space. Ample parking is provided at the rear of the building.

Customer convenience was a prime factor in the selection of the new site. It is adjacent to U. S. 101, the main North-South highway, and near the junction of 101 and the San Jose Freeway. It is also convenient to California Highway 17, and will be right off the interchange of the proposed Freeway development of 101.

This new branch is headed by Divisional Sales Manager, D. L. Bohon.

Thomas C. Wilson Joins Klem

Klem Chemicals, Inc., Dearborn, Mich., announces the appointment of Mr. Thomas C. Wilson as sales engineer in the Cleveland territory. He will be located at the Cleveland office, 10-10 Euclid Building, Cleveland, Ohio.



The new Northern California branch of DeVilbiss Co. is at 1335 N. 10th St., San Jose.

MAR-PROOF LACQUER

SCHAEFER'S Mar-Proof Lacquer is a performance-proven finish that cannot be easily marred or scratched.

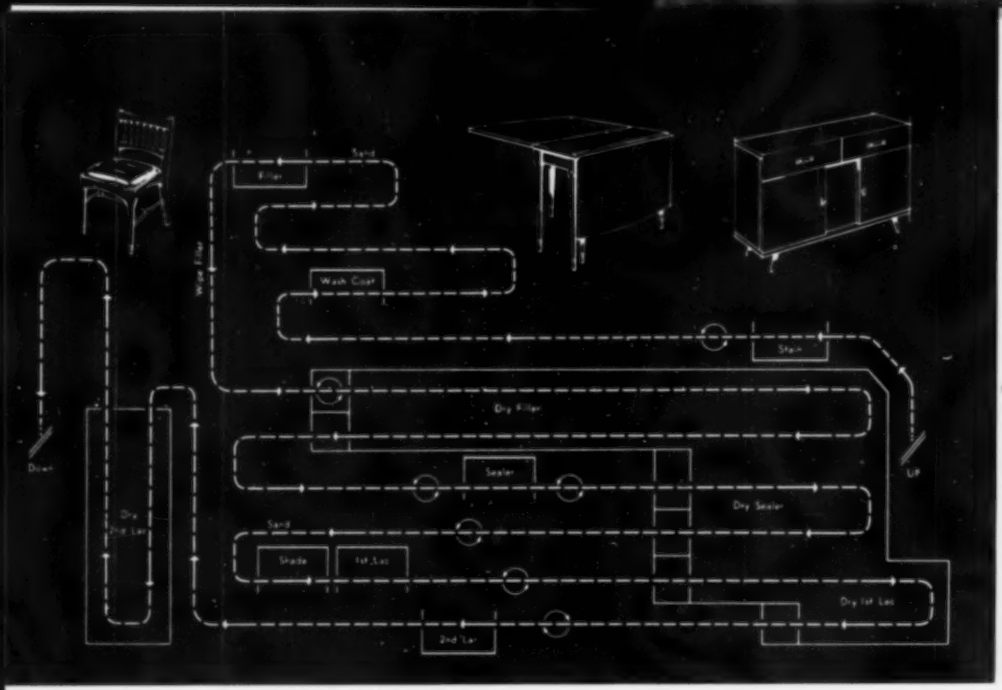
It's tough—tougher than the ordinary lacquers; meets the most critical requirements of current production.

Made in either clear gloss rubbing or satin finish, it produces a splendid transparent coating of full depth on maple, walnut, gum, mahogany and other cabnet woods.

Economical; gives plenty of coverage and dries quickly. Our Mar-Proof Lacquer Sealer is recommended with it for a first-coater.

Working samples furnished without obligation. Write for them!

THE SCHAEFER VARNISH COMPANY, INC.
Louisville, Kentucky



FINISHING FURNITURE ON A Pallet Type Conveyor

BY VICTOR KUNTZ
Finishing Room Foreman*

MANUFACTURING dependable dining furniture is our business. The elements responsible for its dependability include a careful selection of solid and plywood parts, skilled workmanship in construction, and a high grade finish.

Insofar as finishing is concerned we can divide our furniture into two groups. In one is the traditional mahogany; in the other, oak, cherry, walnut and toned mahogany which we call "Summertan mahogany."

The basic reason for this separation of our furniture into two groups is a slight difference in finishing systems. *Both groups are finished at the same time and on the same conveyor, which definitely proves that conveyorized finishing of furniture can be both efficient and flexible.*

*Craddock Furniture Corp., Evansville, Indiana.

Our pallet-type conveyor is about 18-in. above floor level. It has a power chain capable of speeds up to nearly 6-ft. per minute. In the non-powered or close-pack sections of the conveyor—in ovens, cooling areas, etc.—the pallets will move no faster than 1½-ft. per minute. Although the conveyor is designed for cycle finishing, we use it in straight line production. However, because of the particular requirements of our two groups of furniture, some of the spray booths are used for spraying more than one type of material.

Step by Step Routine in Finishing Mahogany

First, let me describe the system used on our traditional mahogany furniture. Then I will give you the difference in procedure with the other woods.

All furniture in the white is sanded smooth before it comes to the finishing room. We insist on a smooth, polished surface because it is practically impossible to produce a quality finish on an improperly prepared wood surface.

In the first spray booth a non-grain-raising stain is sprayed at an atomizing pressure of 45-lbs., and a fluid pressure of 7-lbs. Then follows an air drying period of 35 minutes. In the second booth a wash coat of 6% solids lacquer is applied, followed by an air drying period of 36 minutes. The surface is then lightly sanded with No. 7/0 sandpaper and wiped clean before the pieces arrive in the filler booth.

An oil-base filler is sprayed on at an atomizing pressure of 50-lbs. and a fluid pressure of 25-lbs. The filler is well padded in. On tops we use portable air-driven machines;

All photographs shown in this article, supplied by courtesy of George Koch Sons, Inc., Evansville, Ind.

At left, operator is spraying sealer coat; at right . . . . sanding sealer after force drying and cooling.

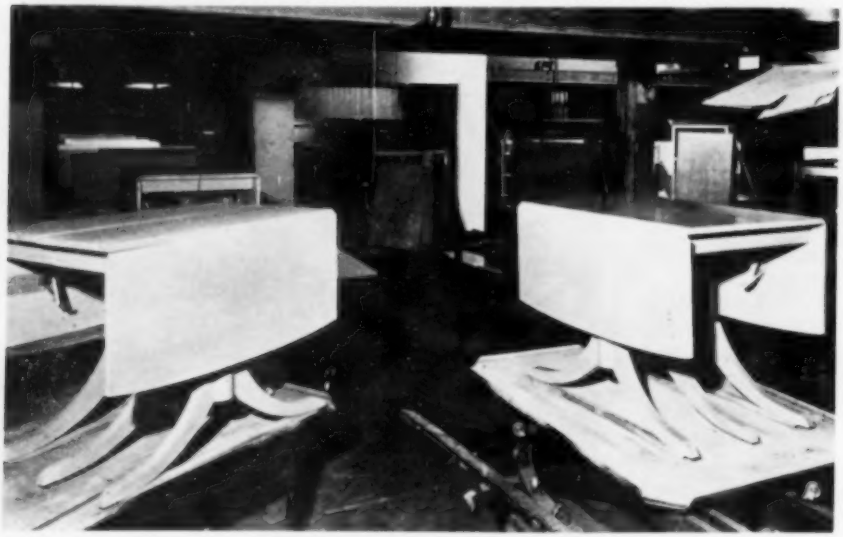
on other surfaces we do hand padding. Wiping and clean-up operations follow. At the end of this line, all surfaces are inspected before they enter an oven through which they travel for one hour and 20 minutes in air that is heated to 120° F. and which has 34% relative humidity.

Regular Sealer and Lacquer Heated Before Application

Leaving the filler oven the articles travel to cool for 18 minutes before they are given a good wet coat of 8% solids lacquer sealer. The sealer is piped to the spray booth from a central supply room located outside the building; it passes through a circulating system and through a paint heater set at 110° F. There are two reasons for this use of the paint heater: 1) It uniforms the temperature of

Filler is padded in and the excess is wiped off here, as the conveyor moves pieces from right to left.

At left, tables are entering the filler oven; at next opening they are coming out. At extreme right is the entrance to the oven for drying the second coat of lacquer. Air make-up system is above; this is one of four such systems that supply air to the ovens.

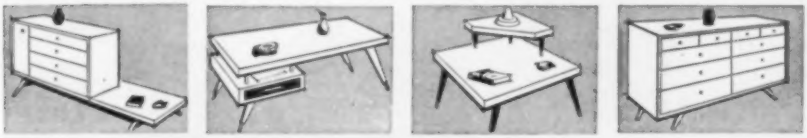


Perlite... Air Dry

Conversion Finish for Furniture.....

NO ovens needed . . . . NO force drying necessary . . . . yet you get the advantages of a force-dry finish with PERLITE. Excellent for use on furniture, especially blond or light colored woods — pink suites, tones, limes, grays, etc. Also for novelty furniture, utility tables, kitchen cabinets, bedroom furniture and other case goods.

You also get better build (one coat of Perlite equals 2 coats of lacquer)—color retention superior to water white lacquer—good print resistance to alcohol and water—NO print with over-night dry at normal room temperature.



If you manufacture any of the above (or any other furniture) we invite your inquiry.

PERFECTION

PAINT AND COLOR COMPANY

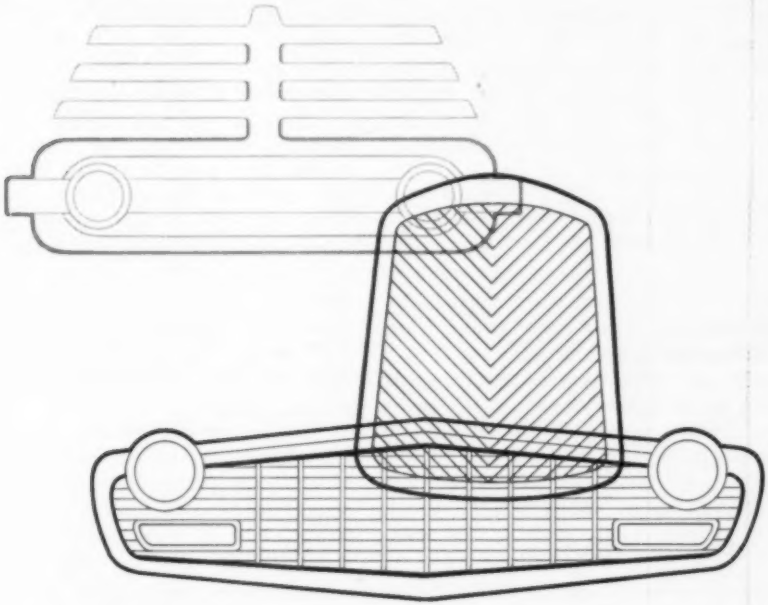
INDIANAPOLIS 2, INDIANA

the sealer, regardless of the season of the year and weather conditions; 2) it materially aids in the building of an adequate sealer film thickness which we consider so necessary for a high quality finish.

The sealer coat is allowed to flash (air dry) for six minutes before it enters the oven through which it travels for 31 minutes at 120° F. with 34% relative humidity. A cooling period of 18 minutes follows. Then the entire surface is sanded smooth with No. 7/0 abrasive paper. The surfaces are brushed clean and tack ragged to remove all possible traces of sanding dust before they enter a spray booth where the lacquer base shading stain is applied. In an adjoining booth the first top coat of 24% solids water-white lacquer is sprayed on. Like the sealer, this lacquer passes through a circulating system and on through a paint heater set at 120° F. Here again, the reasons for heating the lacquer are to be sure of uniform lacquer temperature throughout the year and to build a heavy top coat film. Note: We use a regular lacquer that is warmed—not a hot application type lacquer.

After a flash period of 14 minutes the lacquer coat is oven-dried for 31 minutes at 120° F. with 34% humidity. Leaving this heating zone the furniture travels for 20 minutes to cool before entering the spray booth where the second coat of the same lacquer is sprayed on. This coat is allowed to flash

Wash coat spray booth appears in center. Furniture at left is air drying after staining. Furniture at extreme right is air drying after having received a wash coat.



Here's better protection for aluminum

Aluminum automobile grilles have a new kind of protection in durable, clear lacquers made from Eastman Half-Second Butyrate.

The outdoor performance of clear Half-Second Butyrate films is remarkable. Extremely stable to ultraviolet light, they do not whiten, peel or turn yellow on prolonged exposure to sunlight or severe weathering. They resist attack from water, gasoline, oil, steam cleaning, road chemicals, and strong detergents.

Half-Second Butyrate lacquers are easily applied by conventional spray equipment... air-dry in a matter of minutes...and produce a good build with one coat.

Half-Second Butyrate is highly soluble in such economical solvent combinations as ethyl alcohol and toluene. A low-density material, it offers users high coverage per pound of film former.

If you want to give your aluminum products clear and lasting protection, ask your lacquer supplier today for lacquers made from Half-Second Butyrate...or write us for more information.

HALF-SECOND BUTYRATE

an Eastman film former

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; New York City; Framingham, Mass.; Cincinnati; Cleveland; Chicago; St. Louis; Houston. **West Coast: Wilson Meyer Co.,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

for 22 minutes before it is oven dried for 50 minutes at 120° F., with 34% relative humidity. Upon leaving the final oven, the pieces travel in close-pack formation for 2½ hours to cure before they reach the rubbing room.

Cherry, Walnut, Oak and Toned Mahogany Finish

Now to quickly reveal the difference in finishing systems used on the group of woods other than traditional mahogany:

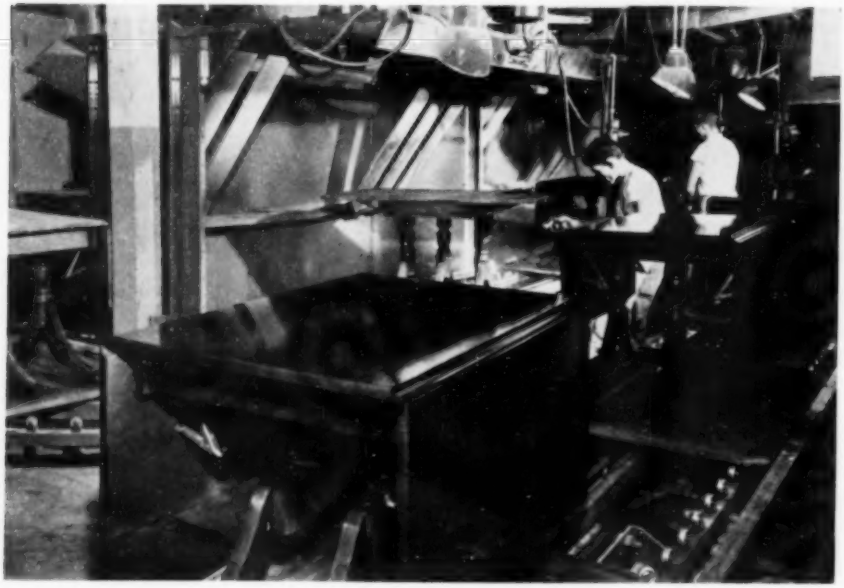
Cherry furniture is sap stained with an airbrush before it is placed on the conveyor. Then it follows through the same operations as the mahogany, with the exception that it is not filled. In the filler booth a wiping stain is applied. The padin and clean-up operators wipe this stain.

On walnut furniture sap stain is sprayed in the first spray booth. In the second booth an NGR stain is applied instead of the wash coat. From this point on, the finish is the same as for mahogany.

For our limed oak finish, a uniforming stain is applied in the first spray booth. This is a light color stain to uniform the surface for the toner, which is sprayed on in the second booth. Oak furniture then follows the same operations as mahogany.

For toned mahogany which we call "Summertan mahogany" the wash coat is applied in the first booth instead of stain. After air drying for 35 minutes this coat is

Operator in foreground is spraying shading stain; operator in background is spraying first coat of lacquer. Pieces at right are moving toward the sealer coat sanding area.



QUALITY THAT SPEAKS FOR ITSELF

IT COST LESS TO USE THE BEST

From our files of thousands of actual "cost per unit tests" run on as many products, we offer the results of one of these tests to prove that Quality finishes can actually lower finishing cost.

It probably can be done for you, also.

Articles Finished: Metal Wall Clock Cases*

[redacted] Green Enamel

Enamel: $2.50 Thinner: $1.10
Mixed: 50-50
Used: 15½ oz. mixture
Finished: 9 Units
Cost per 100 units $2.42

Nikolas Green Enamel

Enamel: $4.10 Thinner: $2.85
Mixed: 3 Enamel, 1 Thinner
Used: 15½ oz. mixture
Finished: 20 units
Cost per 100 units $2.29

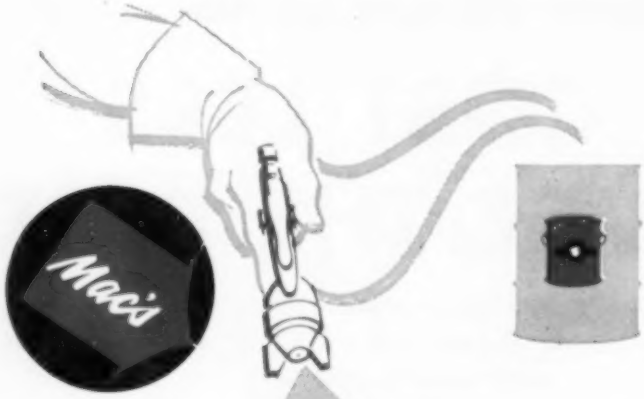
*Copy of this actual test furnished on request.

NIKOLAS
SINCE 1890

For Complete Information, Samples, or Demonstration . . . Write-Wire-Call

G. J. NIKOLAS & CO., Inc.

2850 Washington Blvd., Bellwood, Illinois
33 Grand St., Brooklyn 11, N. Y.



5-Gallon Can at Drum Price

Order a 5-gal. can at drum price and Convince yourself.

Satin Finish Wooling Lacquers

These are ideal lacquers for use where a satin sheen finish with a smooth, silky feel is desired, without requiring a costly rubbing operation.

Their intrinsic and economical values are fully appreciated when used in place of the regular semi-flat lacquers, to produce the much desired satin, velvety finish.

Mac's Satin Finish Wooling Lacquers, if steel wooled only, or if steel wooled with wax using 3/0 or 4/0 steel wool, will produce a very smooth, silky, and scratchless finish that feels more silky than the regular satin finish lacquers. The steel wooling process is inexpensive and easily done.

Mac's Satin Finish Wooling Lacquers are made in different sheens which may be a flat comparable to a 20 sheen or as bright as a 75 sheen lacquer. They may also be used without steel wooling and will produce a fuller and more homogeneous finish than the regular semi-flat lacquers.

Mac's Satin Finish Wooling Lacquers are available in water white light resistant, for use on white or pastel finishes, or in the regular lacquers for the darker shades such as mahogany, walnut, etc. The water white satin finish wooling lacquers are universal lacquers and may be used on both white and medium to dark finishes wherever space for storage is important.

When ordering, advise sheen desired and whether you want water white or regular satin sheen wooling lacquer.

"Eighty-two Years of Service"

The Lawrence-McFadden Co.

Headquarters for Fine Finishes Since 1875

7430 STATE ROAD PHILADELPHIA 36, PA.

sanded with No.7/0 abrasive paper. In the second or wash coat booth the toner is applied, and from this point the toned mahogany follows the same procedure as traditional mahogany.

Rubbing and Polishing

In the rubbing room, furniture legs, bases and knuckles are hand rubbed with No. 4/0 steelwool. Burn-in and patch operations follow. Then 4-F compound is rubbed on these members with burlap. Tops and leaves of tables are rubbed with portable air-driven machines, using No. 400 wet-or-dry sandpaper, with a vegetable oil as lubricant. The tops and leaves are then rubbed with No. 4/0 steelwool; this is followed by an application of 4-F compound and wax, rubbed on with burlap. The operation is then repeated and followed by a clean-up with a wax polish. Legs and bases are wax polished. Inspection follows after application of hardware.

Stain, filler, toner and wiping stain are sprayed from pressure tanks located in the various spray booths. The lacquer and lacquer sealer are piped to the spray booths through a circulating system. The central supply tanks are located in a fireproof building outside the plant. Each tank has a capacity of 150 gallons and is equipped with hand agitators. The material goes out on 90-lbs. pressure and returns on 10-lbs. pressure. Filters are on the return line.

Visitor From Sweden Sees Merits of Iridite Finishes

During a recent tour of the U. S., Rolf Bergvall, Technical Manager of Kemiska AB Candor, a Swedish manufacturer of metal finishing supplies recently licensed to manufacture Iridite chromate conversion coatings and ARP plating chemicals for the Scandinavian countries, visited an important domestic Iridite installation at the National Lock Co., Rockford, Illinois.

Rolf Bergvall of Sweden is third from left.

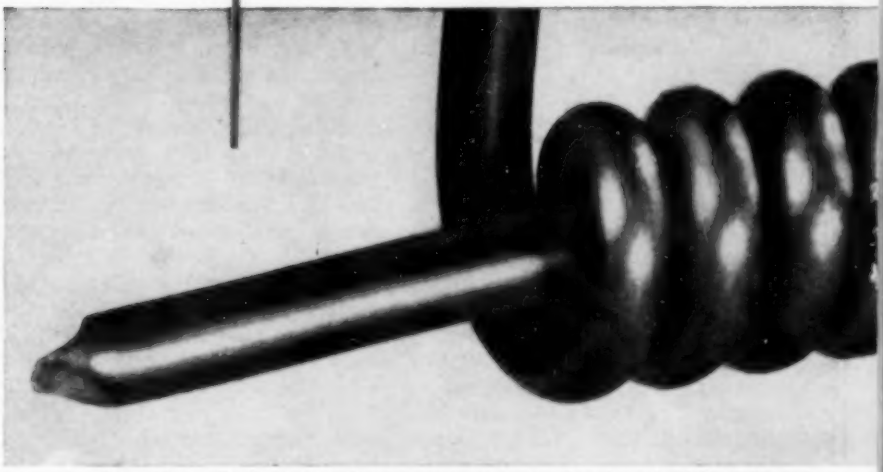
Shown here inspecting typical samples of National's work are: A. L. Poe, District Sales Manager for Allied Research Sales Corporation; Gill Geissman, National's Assistant Finishing Division Superintendent; Mr. Bergvall; and Len Weeg, National's Assistant Finishing Division Superintendent.

Mr. Bergvall visited America primarily to spend several weeks of orientation and training at the Baltimore home office and laboratories of Allied Research Products, Inc., manufacturer of the Iridite finishes and ARP products. Following this period, he visited important installations in many sections of the country.

Polystyrene Plant in India

The first polystyrene plastic manufacturing plant in the middle east and southeast Asia has started production in Bombay, India. The new plant is owned by Polychem Ltd., formed in 1955 by The Dow Chemical Co. and Kilachand Devchand & Co., Ltd., an Indian firm.

Finishing

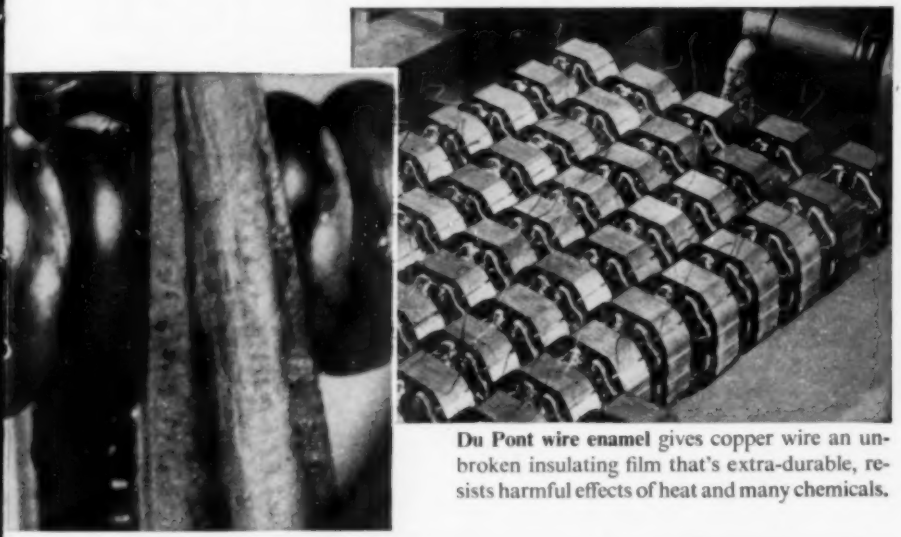


Magnified coil of magnet wire demonstrates exceptional retained flexibility of Du Pont "Lecton" Acrylic Resin Wire Enamel. This remarkable insulating finish is effective even after exposure to heat (125°C.) for 900 hours, and can withstand the bending of wire around its own diameter.

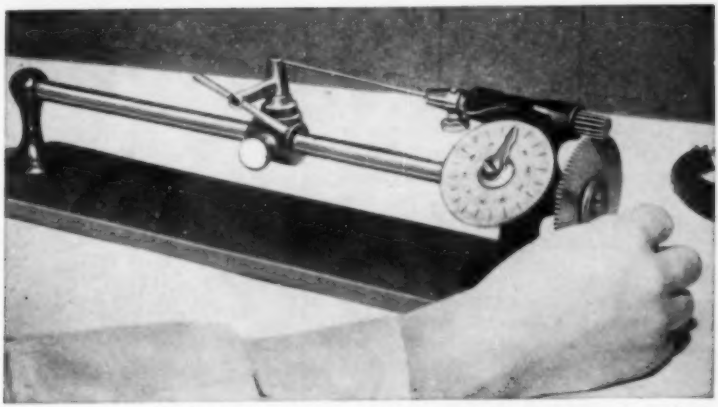
Wire enamel winds up without letdown

The Du Pont family of wire enamels are used today wherever there is electricity . . . wherever there's need for a thoroughly dependable insulating finish to help put electricity to work. Each of the wire enamels is engineered to do a specific job especially well . . . to resist the harmful effects of abrasion, moisture, heat, oils, refrigerants and solvents.

Whether you need a wire enamel to meet special conditions, a chemically inert dry lubricant coating like TEFLON, an outstanding high-bake white enamel like DULUX or a furniture finish like DUCO, Du Pont's experience with a wide range of industrial finishes can help you improve or develop a product —cut production costs. Today, more than 12,000 Du Pont Finish formulas are serving industry. For further information write: E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Delaware.



Du Pont wire enamel gives copper wire an unbroken insulating film that's extra-durable, resists harmful effects of heat and many chemicals.



Twist test is an example of control designed to measure flexibility and adhesion of wire enamel. All Du Pont Finishes are pre-tested to insure maximum performance... highest quality.

DU PONT
REG. U. S. PAT. OFF.

Du Pont Industrial Finishes

Chemically engineered to do the job better

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

LETTERS from READERS

More on Polyurethanes

We saw a discussion of polyurethanes on pages 100 and 102 of the June 1957 issue. As we are quite interested in getting more details on this product, could you possibly send us manufacturers' and/or marketters' names and addresses in our part of the country (New York City)?—*P. I. F.*

The name and address of the above inquirer will be given on request.—*Editor.*

To Find How Much Paint Has Been Thinned

We are writing to request a reprint, if available, of the article entitled, "To Find Out How Much Paint Has Been Reduced," written by Karl Schreiber, which appeared in the May 1957 issue of *Industrial Finishing*, pages 64-70.—*L. F. G. & S.*

Tear sheets of the article are being mailed to you.—*Editor.*

Machine for Continuously Coating Nails

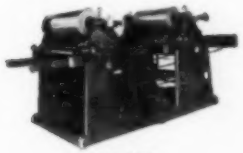
We noticed in the Questions and Answers section of May issue, page 106, an inquiry about, "Continuous Flow For Coating Nails."

We have built a number of Fibra Degreasing machines for the continuous cleaning of nails. We have also used this machine for the continuous application of different coatings. We are sending you literature on this unit so that you may send it to people who are interested.—*Manufacturers Processing Co., 1360 Hilton Road, Detroit 20, Michigan.*

Continuous Stripping of Flat Wire Mesh Conveyor

We are confronted with a stripping problem on a 1-in. mesh flat wire conveyor about 80-ft. long and 60-in. wide. The material on this conveyor is a lacquer wash coat and then a catalyzed synthetic varnish. This ma-

"I know finishing estimates vary, but did Miss Smithers happen to walk through your office when you made out ours?"

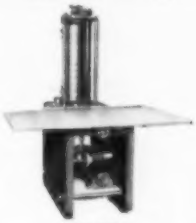


DH-128

For That Look Of Quality

HAMANT GRAINERS

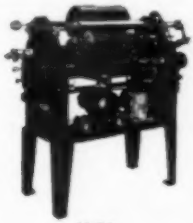
Simulate the most costly woods . . . the most beautiful fabric patterns . . . the veining in marble.



V-27

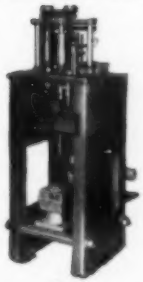
DH-128—Only Grainer that will print two colors simultaneously, with perfect register. Handles sheets up to 48 inches wide at speeds of 25 to 75 feet per minute.

V-27—For continuous printing of 3 sides of cabinets up to 40 inches high at speeds of 12 to 36 feet per minute. The low cost way to grain furniture, radio and TV cabinets. Registering device optional.



H-96

H-96—Gives 15 to 40 continuous prints per minute on work of unlimited length. Skilled operators not necessary. Ideal for small panels, table tops, drawer fronts.



V-23

V-23—For edge graining table tops, drawer fronts and doors. Has a graining height of 5 inches. Ideal for printing small parts. Small diameter rolls keep replacement costs at a minimum.

All Hamant Grainers are guaranteed and installed under the supervision of a trained serviceman, at no additional cost.

For information write or phone

Hamant TOOL CO., INC.

502 Warren St., Dayton 9, Ohio, Phone Michigan 4838
In Canada: Cooper & Horton, Ltd., Toronto, Ontario.

terial has to be removed every eight hours of running time and for this reason we assume that a stripping material would be too expensive.

Could you tell us what type of solvent tank to incorporate into our process? (Our conveyor speed is 8-ft. per minute.)—*P. Inc.*

We are referring you to several suppliers of removers and stripping compounds who have had experience with problems such as yours.—*Editor.*

"The conveyor's going at the right speed, but some wise guy up ahead is winding up the toys."

Tumbling Enamels

Please send us the names of a couple of manufacturers of tumbling enamels or lacquers to be used for finishing small wood turnings, such as small handles, wheels, balls.—*V. S.*

Information supplied.—*Editor.*

Mail Box Finish Wanted

We are looking for a tough finish for our spray brass apartment mail boxes. . . .—*A. Mfg. Ltd.*

Marbleizing "Float" Colors

We are in need of marbleizing colors, that is colors that will float on water. We also need colored lacquers. Can you name a good source? Incidentally we wrote —— Co. in Chicago and asked who jobbed their colored lacquers and they did not even give us the courtesy of a reply.—*I. S.*

In a letter we are suggesting sources of supply for the materials you want.—*Editor.*

Hand Graining Facilities

We would appreciate information on hand graining equipment. Graining brushes are what we are chiefly interested in.—*L. F. & Co.*

Try H. Behlen & Bro., 10-12 Christopher St., New York 14, N. Y.—*Ed.*

Sterling Sander Parts

Will you please tell us the name of the company that sells Sterling Sanders and parts?—*Paint & Body.*

We believe that Sterling was purchased by Porter-Cable Machine Co., 2601 N. Salina St., Syracuse 8, N. Y. —*Editor.*

Want To Know About "Teflon"

I am interested in obtaining complete information on a product called "Teflon." Will you please send me

IBM relies on RANSBURG NO. 2 PROCESS Electrostatic Spray Painting

to get the excellent and uniform high quality wrinkle finish on all

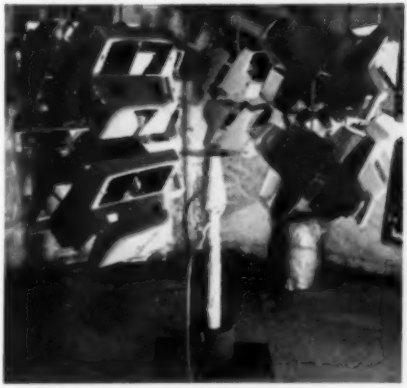
IBM ELECTRIC TYPEWRITERS

IBM's strict quality standards are easily maintained with Ransburg No. 2 Process in the painting of Electric Typewriter parts. Rejects by the former hand spray method used to run as high as 30% on some parts. Now, with automatic Electro-Spray, rejects for all reasons are only 3% to 5%.

Three Times as Many Pieces per Gallon!

Along with increased production, paint mileage is stepped up, and they get three times as many pieces per gallon as by the former hand spray method. That's because efficiency of the Ransburg No. 2 Process Reciprocating Disk puts the paint where it's supposed to go . . . on the parts.

Want to know how Ransburg Electro-Spray can improve the quality of your painted products . . . and at the same time, cut your paint and labor costs? At no obligation to you, we will make complete laboratory tests with your products to prove the advantages and cost saving benefits which can be yours with Ransburg No. 2 Process. Write or call.



Both prime and finish coats are uniformly applied to IBM Electric Typewriter cases as they rotate around the floor-mounted Ransburg No. 2 Process reciprocating disks. Automatic Electro-Spray provides three times as many pieces per gallon as by former hand spray.

Ransburg ELECTRO-COATING CORP.
Indianapolis 7, Indiana

RANSBURG

the manufacturer's name and address, and any other information you might have?—*S. H. S.*

Yes, Teflon is a product of E. I. duPont deNemous & Co., Inc., Polychemicals Department, Wilmington, Delaware.—*Editor.*

"A hundred twenty five dollars for a paint job? I thought this was a minute car wash I drove through!"

Thermo-jet Drier

In the January 1957 issue, there is a request for additional information about a General Research Thermo-jet drier reported in the November 1956 issue. We would like to receive your indication as to where this additional information can be obtained.—*C. H. (Holland).*

We refer you to General Research & Supply Co., 572 S. Division St., Grand Rapids 2, Mich.—*Editor.*

Graining Equipment

Being one of the leading producers of materials for graining, and suppliers of graining equipment, we are interested in the request made by Alumitile, Inc., in the Letters from Readers section of June issue, page 110.

Please present our name to this company; we would like to work with them.—*Reliance Varnish Co.*

Outdoor Gold Lacquer

Referring to February 1957 issue, we are interested in the article, "Gold Lacquer on Outdoor Products," appearing on pages 40 to 44.

Would appreciate your advising from whom we could purchase a 5-gallon can of this new gold butyrate lacquer.—*D. N. Co.*

In a letter we are submitting information you asked for.—*Editor.*

Idolizing Low Cost

In the February 1957 issue there appeared an article entitled, "Idolizing Low Gallon Cost Can Ruin a Good Industry" (pages 26-30). Is it possible to get reprints in quantities of that feature? What is the cost?—*W. S.*

Yes, we can supply perhaps 200 copies at 10 cents per copy.—*Editor.*

Air Dry Black Wrinkle

On a product which requires a certain amount of touch-up after final inspection, we are using a black wrinkle finish. To date, we have not been able to procure an air-dry black

Unique

and EXCLUSIVE formulations for plastic products . . .

Randolph experience and research have created spray lacquer coatings equal to every problem presented by the plastic surface. Particularly, adhesion and the tendency to craze.

Small wonder then that manufacturers of plastic products turn to Randolph for finishes that work miracles in decorative color contrasts. Each coating is a special creation—the uniquely and exclusively *right* coating. It is proved so by Randolph's technical skill, meticulous testing and actual performance—and by the powerful new lift it gives to your sales results.

Other good reasons for using Randolph coatings for plastic are — availability in a rainbow-bright variety of colors, and prompt delivery.

If you're fretted by a plastic coating problem—OR ANY FINISHING PROBLEM—let Randolph's technicians help you. Write us today!

Randolph PRODUCTS COMPANY
CARLSTADT, NEW JERSEY
LACQUERS • ENAMELS • DOPES • THINNERS

wrinkle; and baking of the finished product is impossible.

We would appreciate receiving information on an air-dry black wrinkle paint and the name of the supplier. Since this job is in production, a prompt reply will be appreciated.—*W. L. M.*

A few concerns manufacture and sell an air-dry black wrinkle finish suitable for use in touch-up and repair finishing. In a letter we are giving you the names and addresses of four of them.—*Editor.*

Oxford Varnish Co.

We are seeking the address of the Oxford Varnish Co., Detroit, Mich. —*M. Furniture Company.*

This firm is now operating as The Oxford Corp., and its address is 522 Springfield St., Dayton 3, Ohio.—*Ed.*

Syer, Finishing Consultant

I would appreciate it if you would put me in contact with Mr. C. Raymond Syer, Finishing Consultant, who has advertised in this magazine. —*A. S. E.*

In a letter we are giving you Mr. Syer's present address.—*Editor.*

Paint Drum Heaters

This is a letter of appreciation for the very fine article published in June issue, showing a cut of our Palmer Drum Warmer as one of the illustrations for the article.

The warming of drums of material is becoming quite a business, and I am sure your article will promote inquiries regarding our product. We will certainly keep count of these, if there is any way to identify the sources, and in another year we hope to expand our advertising program to include *Industrial Finishing Magazine.—Harold L. Palmer Co.*

Burn-Off Cleaning

It has come to our attention that an article written by Mr. P. C. Bardin appeared in the March 1957 issue of *Industrial Finishing.* The title of the article is: "Using Burn-Off Ovens to Dry-Clean Metal Surfaces." If possible, please send us a copy of this article.—*Ford.*

A copy has been sent to you.—*Ed.*

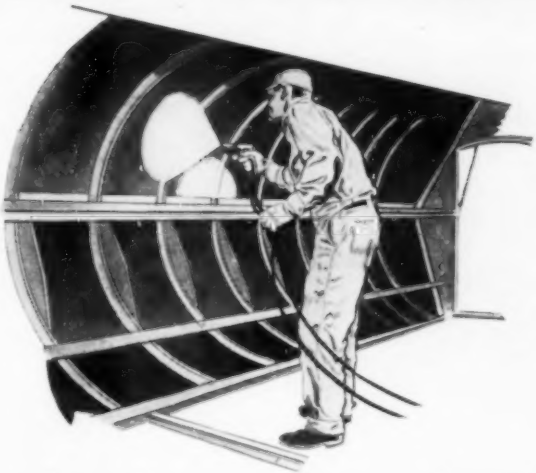
Automatic Spray Article

We would like to obtain a copy of the article, "Automatic Setup Sprays Enamel-on-Aluminum Tile," which appeared in March 1957 issue, pages 24 to 28.—*Kaiser Aluminum & Chemical Sales, Inc.*

Copy is being sent.—*Editor.*

Gyra-Flow Automatic Cleaning-Coating

All future correspondence can be sent to me at the address given below, and I will answer all questions in regard to Gyra-Flow automatic cleaning, dip or spray coating; and/or the complete automatic finishing of products or parts. Much has been done during the past few years in order to further enhance the value of this system of mass production.—*Dwight L. Millar, Patentee, American Gyra-Flow Systems, P. O. Box 3064, Dallas 21, Texas.*



wash primers stop galvanic corrosion!

A single treatment with a wash primer based on Shawinigan Resins' FORMVAR or BUTVAR prevents galvanic corrosion . . . regardless of the types of metals joined. Users obtain outstanding corrosion protection and save a substantial amount of shop time because wash primers eliminate the need for separate treatments of different metals . . . they may be applied after a unit is fabricated, thus providing all-over protection.

A wash primer based on FORMVAR or BUTVAR adheres firmly to joints and surfaces which incorporate dissimilar metals. The primer offers easier application and handling, distinctly more surface protection, lower maintenance expense and is an excellent foundation for top coats.

Wash primers have extended the life of metals in many applications and have opened profitable new markets for paint manufacturers. The primers are easily formulated in a regular ball or pebble mill. Write today for full technical information and suggested formulations to Shawinigan Resins Corporation, Department 2908, Springfield 1, Mass.

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America's finest furniture...

IS FINISHED ON DE BURGH CONVEYORIZED SYSTEMS

Furniture manufacturers know that the efficiency of their production line means their profit or loss in the highly competitive furniture market. That's why they choose a DeBurgh System for furniture finishing . . . a system designed by a furniture man!

Call on Koch for a free appraisal of your plant's requirements. Expert engineers will prove to you how you can save, profit and improve your product.

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"Cycle System" allows small plants to operate with the production efficiency of large plants.

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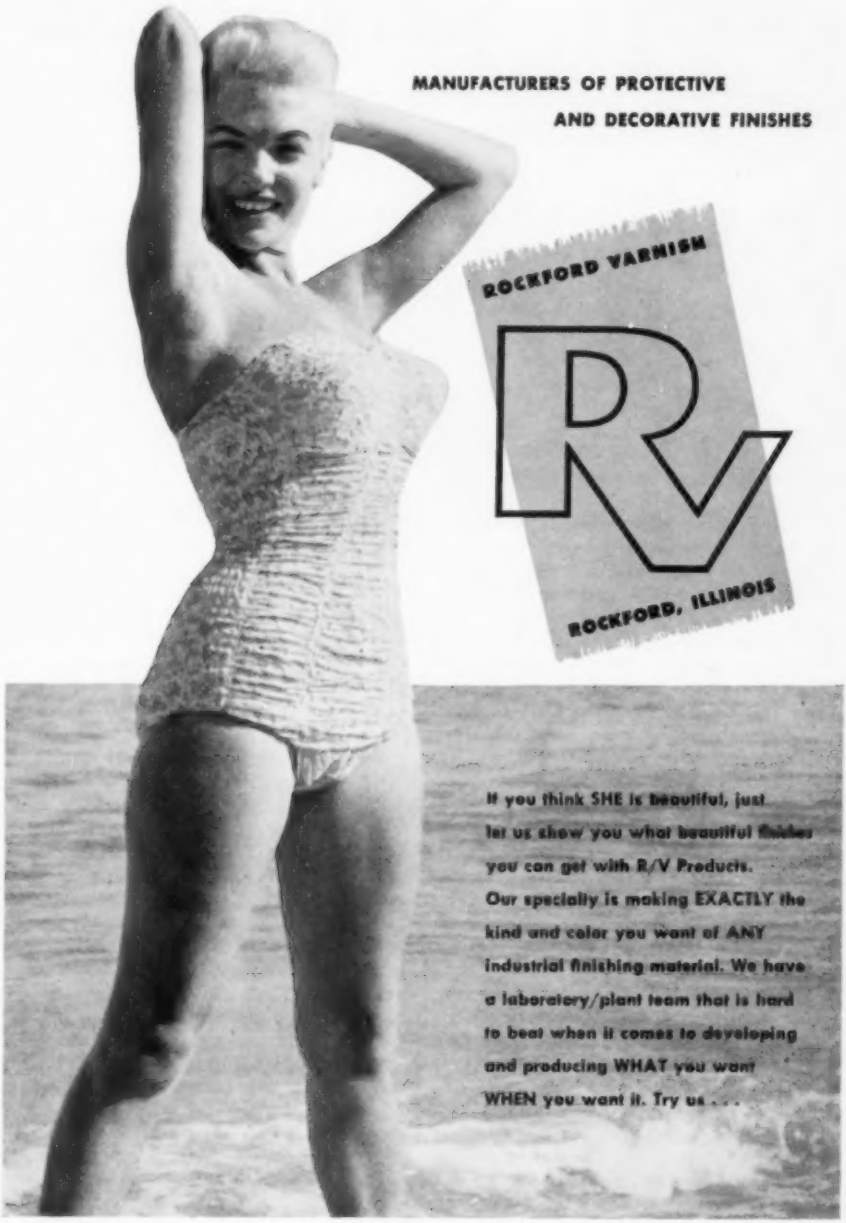
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to beat when it comes to developing
and producing WHAT you want
WHEN you want it. Try us . . .

QUESTIONS and ANSWERS

Dip Coating in Paint That Floats on Water

One of our salesmen has run into an application of aluminum paint which is new to me. Briefly, the aluminum paint is floated on water. This is presumably done to avoid using a large quantity of paint. Water is at the bottom of the tank and paint is on top. The layer of aluminum paint is perhaps 3-in. to 4-in. thick.

This process is successful in small dip tank operations where the total quantity of water and aluminum does not exceed 50 to 75 gallons. In large quantities—300 to 400 gallons per tank—the method has not proved to be so successful. Our salesman informs me that he heard of a company in the Buffalo area that is now using this method with good results.

Do you know of this method of paint application?—*B. E.*

Yes, we have heard of floating various types of lacquer, paints and finishes on water for dipping. While this method will work experimentally, and in small production, where the dipping is at a uniformly steady speed, straight down and straight up, We have been advised that it is not recommended as a regular practice, although we know it is possible to do the dipping this way.

We have been advised that the descent of the work into the paint should be at a reasonably slow steady rate because it is on the down stroke that the object is coated, so that its surface will be protected from contact with water as it goes deeper into the tank.

Another factor entering into the possible success of this method of dipping is the shape, size and smoothness of the objects being dipped.

In many dipping tanks it is desirable to keep some kind of stirring or agitation going on to prevent any settling of paint pigment.

Because of fairly rapid evaporation of solvents from the surface of paint in a dip tank, it is necessary to take frequent viscosity readings and to add more solvent or thinner from time to time. And when any new solvent is added the paint should be well stirred to mix the added solvent into it uniformly. This stirring could stir water from below up into the paint, which would be undesirable.—*J. M. K.*

The floatation of a small quantity of finishing material on the surface of a large tank filled with water, and dipping large parts down through the paint and into the water is an ancient art. It is evidently a somewhat forgotten art.

Many years ago, when ornate brass beds were all the rage, water-dipping, as it was called, was the standard method of coating these complicated sections. I believe some manufacturers of bed springs still use the system today. Actually, it is the only economical way of coating very complicated sections without investing in either an expensive automatic system or a tremendous quantity of paint.

At the time of its popularity,

How many places can you use push-button touch-up?

Damage to the finish of your product happens anywhere—from your own assembly department to the final customer. With the Sprayon Self-Spraying Touch Up Tool *any* employee quickly repairs the damage *right where it happens.* Costs go down. Eye-appeal of your product and customer satisfaction go up! Sprayon goes right to your source for your own touch-up finish, custom loads the Tools for you under your own label. Exclusive Sprayon features mean even unskilled help do a factory-match job in minutes ...for pennies! It's a complete paint shop in a can!

Write for FREE touch-up folder.

Free training movie, "The Finishing Touch" (16 mm, sound, color, 11 minutes) Write for information.

SPRAYON *Self Spraying* TOUCH UP TOOL ®

SPRAYON PRODUCTS, INC.

2071 East 65th Street • Cleveland 3, Ohio

water-dipping was confined to the application of clear or unpigmented materials, lacquers, varnishes and some japans. Materials of low viscosity work best, inasmuch as they will flow into and around the work fast enough to completely coat it before the level of the water is reached during the dipping. The only other requirement of the finishing material is that it be light enough to float and that it be completely immiscible (will not mix) with the water.

Recently there has been some successful revival of this method for the coating of wrought iron work, which is now enjoying considerable popularity. Most of this is dull black, and both lacquers and synthetic materials are being used.

As you suggest, the primary purpose of "water dipping" is to save paint. However, since the small amount of surface paint is rapidly used up, it must be constantly replenished with freshly mixed material; thus settling, skinning, gelling, etc., can be kept to a minimum. Of course, no heavy pigmentation is practical in a system of this sort.

Although I have never seen it done commercially with aluminum, I have not the slightest doubt that it can be done. The aluminum pigments available today, especially the leafing grades, have excellent suspension characteristics and no affinity for water. I did a little work with these in a coumarone-indene vehicle. While the experiments were necessarily hurried, they showed definite promise.

As for any limitations on the size of the tank, I cannot see any reason for it, except that there should be an excess of 10-in. or 12-in. below the dipping maximum. This is to prevent the plunging of the paint against the bottom on the down-dip; it can become anchored there and be wasted. There should be approximately one inch of paint depth for every 12-in. of water depth.—*Geo. A. Conrad.*

Standard Finishes For Plywood Panels

We plan to get more actively into the finishing of plywood—pre-finishing plywood panels, that is. Before contacting prospective customers, we are eager to specify what we can offer them with respect to quality standards.

Are you aware of any standards that have been accepted in the wood manufacturing line with respect to quality standards for plywood? If so, where can we obtain a copy of a description of these standards? We will appreciate your help.—*C. Finishing Company.*

The Hardwood Plywood Institute has recently held numerous conferences and developed standards for the physical and chemical requirements for plywood. I understand that it has also developed tests for both the plywood and the finish. However, I think that this data is intended only for members of the Institute. You may learn more about this if you will write Mr. Richard D. Behm, Director of Trade Promotion Program, Hardwood Plywood Institute, 600 S. Michigan Ave., Chicago 5.—*P. C. Bardin.*

We haven't had time, as yet, to contact any of the plywood associations, but a recent visitor to our office has had some experience along this line. He says the thickness of any protective coating on plywood should be a minimum of .003-in. or 3 mils. His company has developed a coating that contains some wax. Thinned 50%, it can be used as a penetrating sealer. It can be combined with a transparent stain to give the plywood any uniforming color desired, and then sprayed on. Then a coat of the unreduced material can be sprayed on to give the plywood an acceptable finish.—*Editor.*

Shipment of Raw Material for Surface Coatings Industry

One million pounds of Isophthalic acid, a new chemical raw material for the surface coatings industry, arrived this month in New York on board the S. S. Edward Luckenbach. This first waterborne shipment of Isophthalic from Oronite Chemical Co.'s new multi-million dollar plant located at Richmond, California, marks the beginning of regular large scale shipments to Oronite warehouses, providing faster delivery to resin processors and paint manufacturers located throughout the Atlantic Seaboard and midwestern areas.

According to the Oronite Chemical Co., enamels, varnishes and flats derived from Isophthalic based alkyd resins possess properties that are superior to surface coatings made with the old standby, phthalic anhydride based resins. Briefly, IPA resins show greater heat and chemical stability, make harder, higher melting resins, produce tougher films, form higher polymers with alcohols and amines. Isophthalic has lower vapor pressure than PA, won't cake and is less toxic. With IPA longer oil length resins can be produced that dry faster to tougher, more flexible films, and the longer oil lengths result in savings.

Paint Courses at University

Basic principles of the manufacture and application of paint, varnish, and lacquer products will be the subject of a 15-week evening course this fall at New York University's Division of General Education.

Teaching the surface technology course will be Dr. Myron A. Coler, consulting engineer and technical director of the Markite Co., New York, and Elias Singer, technical director of the Troy Chemical Co., New York. The class will meet from 8:10 to 9:55 p. m. on Wednesday evenings from Sept. 25 through Jan. 22 at NYU's Washington Square Center.

Further information can be obtained from the Division of General Education, New York University, 1 Washington Square North, New York 3.

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SPECIALISTS IN WOOD FINISHING MATERIALS

Specialists for Fifty Years

In 1957 we celebrate our 50th year of developing and producing quality finishes for wood. In all these years we have specialized *exclusively* in producing wood finishing materials . . . . . Stains • Fillers • Toners • Base Coats • Bleaches • Sealers • Lacquers • Varnishes • and Special Materials. Manufacturers of furniture and other wood products are invited to investigate Lindeman's specialized products and service.

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Wood Finish Company, Inc.
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The Autocall Co.
Bendix-Westinghouse
Brush Electronics Co.
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Cleveland Pneumatic Tool Co.
Cleveland Register & Grille
Collier Steel Corp.
The Colson Corp.
Diamond Alkali Co.
Dixie Culvert Mfg. Co.
Dornback Furnace & Foundry
Electric Wheel Co.
Euclid Electric & Mfg. Co.
Federal Welding Service, Inc.
Fisher Body Div., G. M.
The Frankelite Co.
Gardner Displays Co.
General Electric Co.
The General Fireproofing Co.
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Goodyear Aircraft Corp.
Goodyear Tire & Rubber Co.
The Harcart Mfg. Co.
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Health Items, Inc.
Hope Metal Products, Inc.
Hull Mfg. Co.
Imperial Lighting Products Co.
The Kirk & Blum Mfg. Co.
Koolvent Aluminum Awning Co.
Liberty Bell Mfg. Co.
Martin Bros. Electric Co.
Martin Steel Products Corp.
Mine Safety Appliances Co.
Mor-Flo Heater Co.
The C. A. Olsen Mfg. Co.
Packard Electric Div., G. M.
The Perfection Steel Body Co.
The Perfection Burial Vault Co.
The Perfeclite Co.
Picker X-Ray Corp.

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The Rybolt Heater Co.
The Scott & Fetzer Co.
Taylor-Winfield Corp.
Thompson Products, Inc.
Truck Engineering Corp.
Vacuum Metallizers, Inc.
John C. Virden Co.
Vichek Tool Co.

Random Comment on the Industrial Scene

(Continued from page 6)

Coating Interior of Pipe. A new machine for applying Tarset, a coal tar-epoxy resin coating, to pipe interiors has been developed by the Protective Coatings Division of Pittsburgh Coke & Chemical Co.

The company's applicator, recently demonstrated, is capable of laying a smooth film of Tarset on the interior of 20-ft. lengths of 3, 4 and 6-in. pipe. It achieved a 15 to 20-mil thickness in a single pass.

The tar-epoxy blend and its catalyst are fed separately into the applicator in carefully controlled proportions. High speed mixer blades thoroughly blend the two components in the space of a few seconds. This eliminates the possibility of error and oversight, as well as the problems of pot-life encountered in mixing large batches.

* * *

More Man-Made Rubber. In less than 10 years the producers of natural rubber will be supplying less than half of the world's total rubber needs, a leading rubber official told the New York Society of Security Analysts in New York City recently.

William S. Richardson, president of The B. F. Goodrich Co., said that the overall world consumption of both natural and man-made rubber "will probably increase over the next 10 years by an average trend rate of about 5% per year compounded.

"There is not enough natural rubber in sight in the rubber growing areas of the world to take care of the increasing demand," he declared. "Under the most optimistic assumption, natural rubber production cannot increase more than 2½% annually through 1956."

Pre-Finished, Non-Burn Plastic. Production economies, ease of fabrication, permanence and sculptured beauty are offered to users of bright plated metals, wood veneers, grained or textured plastics, as well as acoustical materials by "Pearsonite," a basically new plastic.

The new material, announced by Metallic Plastics Corp., 27-10 44th Drive, Long Island City 1, N. Y., behaves amazingly like light-gauge sheet metal and faithfully retains the most detailed three-dimensional forms. It will not burn, is almost completely chemically inert, and resists abrasion from continued hard use. It is available in over 3000 variations of color, finish, texture, gauge and perforating pattern.

* * *

Safety Feed on Incinerator. A new kind of incinerator safety-feed device for use on large industrial top loading incinerators is announced by the Brodie Engineering Corp., 141 E. 4th St., Saint Paul 1, Minnesota.

This safety-feed device provides a completely fool-proof method for loading large incinerators having top openings. It prevents the possibility of any possible flame flashes coming up through the charging opening while the incinerator is being loaded. This, in turn, eliminates all of the formerly-existing hazards to personnel and property open to exposure from flame, smoke, and gases coming out through the charging opening.

* * *

Risk-Proof Motels. Luxury motels, built with color anodized aluminum units which can be installed swiftly and moved easily in the event of highway relocation, now promise to make the motel business almost "risk-proof." [*Continued on page 94*]

Acme Plating Co.
Addressograph-Multigraph Corp.
American Rad. & Std. Sanitary
American Steel & Wire
Fred Arbogast Co., Inc.
The Autocall Co.
Bendix-Westinghouse
Brush Electronics Co.
Capitol Mfg. & Supply Co.

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Dixie Culvert Mfg. Co.
Dornback Furnace & Foundry
Electric Wheel Co.
Euclid Electric & Mfg. Co.
Federal Welding Service, Inc.
Fisher Body Div., G. M.
The Frankelite Co.
Gardner Displays Co.
General Electric Co.
The General Fireproofing Co.
Godfrey & Wing Lamps
Goodyear Aircraft Corp.
Goodyear Tire & Rubber Co.
The Harcort Mfg. Co.
The E. F. Hauserman Co.
Health Items, Inc.
Hope Metal Products, Inc.
Hull Mfg. Co.
Imperial Lighting Products Co.
The Kirk & Blum Mfg. Co.
Koolvent Aluminum Awning Co.
Liberty Bell Mfg. Co.
Martin Bros. Electric Co.
Martin Steel Products Corp.
Mine Safety Appliances Co.
Mor-Flo Heater Co.
The C. A. Olsen Mfg. Co.
Packard Electric Div., G. M.
The Perfection Steel Body Co.
The Perfection Burial Vault Co.
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Thompson Products, Inc.
Truck Engineering Corp.
Vacuum Metallizers, Inc.
John C. Virden Co.
Vichek Tool Co.

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"There is not enough natural rubber in sight in the rubber growing areas of the world to take care of the increasing demand," he declared. "Under the most optimistic assumption, natural rubber production cannot increase more than 2½% annually through 1956."

Pre-Finished, Non-Burn Plastic. Production economies, ease of fabrication, permanence and sculptured beauty are offered to users of bright plated metals, wood veneers, grained or textured plastics, as well as acoustical materials by "Pearsonite," a basically new plastic.

The new material, announced by Metallic Plastics Corp., 27-10 44th Drive, Long Island City 1, N. Y., behaves amazingly like light-gauge sheet metal and faithfully retains the most detailed three-dimensional forms. It will not burn, is almost completely chemically inert, and resists abrasion from continued hard use. It is available in over 3000 variations of color, finish, texture, gauge and perforating pattern.

* * *

Safety Feed on Incinerator. A new kind of incinerator safety-feed device for use on large industrial top loading incinerators is announced by the Brodie Engineering Corp., 141 E. 4th St., Saint Paul 1, Minnesota.

This safety-feed device provides a completely fool-proof method for loading large incinerators having top openings. It prevents the possibility of any possible flame flashes coming up through the charging opening while the incinerator is being loaded. This, in turn, eliminates all of the formerly-existing hazards to personnel and property open to exposure from flame, smoke, and gases coming out through the charging opening.

* * *

Risk-Proof Motels. Luxury motels, built with color anodized aluminum units which can be installed swiftly and moved easily in the event of highway relocation, now promise to make the motel business almost "risk-proof." [*Continued on page 94*]

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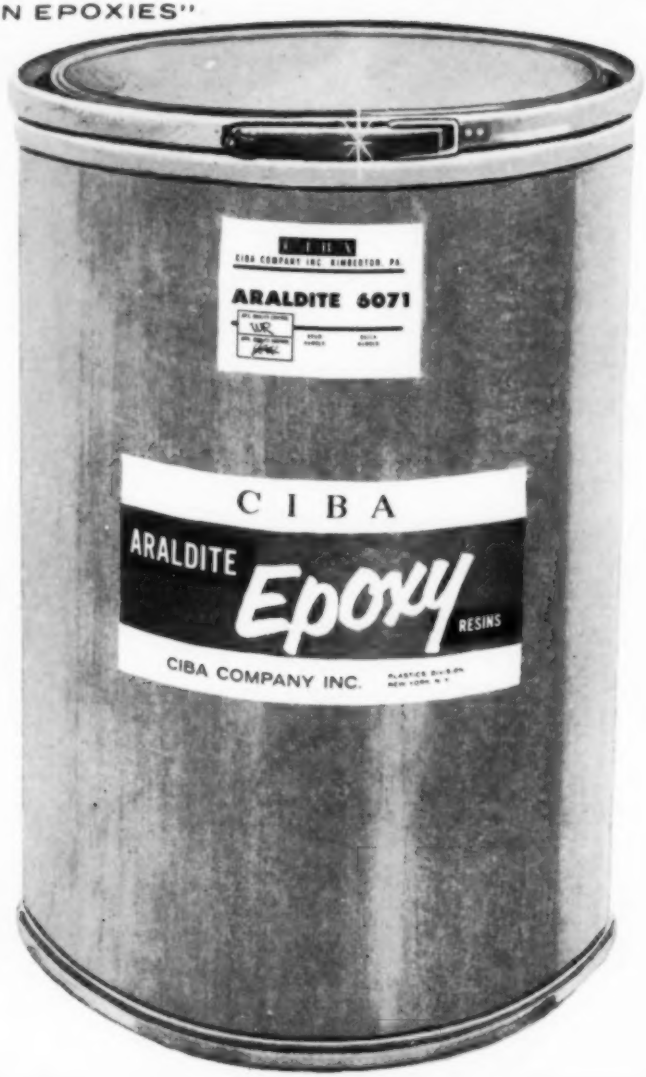

There's a CIBA sales and service agency near you: **Harry A. Baumstark & Co.**, St. Louis, Mo. • **Charles L. Burks Co.**, Black Mountain, N. C. • **John D. Butts**, Pittsburgh, Pa. • **Commercial Chemicals, Inc.**, Buffalo, N. Y. • **Dorsett & Jackson Inc.**, Los Angeles, Calif. • **Henry L. Grund, Inc.**, Cleveland, Ohio • **The Houston Company**, Seattle, Wash. • **Fred A. Jensen & Associates**, Chicago, Ill. • **T. C. Kiesel**, Cincinnati, Ohio • **The A. B. Kohl Sales Co.**, Baltimore, Md. • **D. H. Litter Co., Inc.**, New York, N. Y. and Allston, Mass. • **William C. Loughlin & Co.**, San Francisco, Calif. • **Matteson-Van Wey, Inc.**, Detroit, Mich. • **Geo. A. Rowley & Co., Inc.**, Philadelphia, Pa. • **Thompson-Hayward Chemical Co.**, Kansas City, Mo. and branch offices

In Canada: **Bate Chemical Corporation Ltd.**, Toronto, Ontario, Montreal, Quebec.

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In Canada: CIBA Company Limited, 1235 McGill College Ave., Montreal, Quebec.

Martin Capp, president of the Capp Mfg. Co. of Minneapolis, which is turning out the prefabricated units, says they make it possible to set up a motel in a matter of days at a cost of one-third less per room than the national average.

A new owner, according to Mr. Capp, can start with a few units and add others "virtually overnight" as business growth warrants. If he later decides he has erred in his choice of a site, or if highway relocation threatens to divert traffic, he can move the lightweight aluminum units to a new location.

* * *

Self Spray Containers. America's 11-year-old aerosol industry passed its billionth package mark late in 1956 as it chalked up another record annual production of 320 million units of the self-spraying household and industrial aids. The 1956 production was 33% ahead of 1955.

Most significant change last year was the rapid growth in pressurized personal products, which the survey indicated now account for about half of the total aerosol production. One type alone—hair sprays—took over the top position among the more than a hundred different types of products available in aerosol containers.

Pigmented and metallic paints and clear plastic sprays also increased sharply in 1956, with last year's production of 22,557,418 units, more than doubling the 1955 figure of 9,247,510 units.

* * *

Red Light Shows Blown Fuse. A new fuse invention, the Sightmaster, that offers greater safety, economy and ease in locating a blown fuse, is being introduced by Ward International, Inc., 601 S. Vermont Ave., Los Angeles, California.

Fully approved by the Underwriters Laboratories, the Sightmaster is screwed into fuse boxes like any other fuse. However, when a short circuit occurs, the Sightmaster's special features come into action: First, the Sightmaster fuse blows out to eliminate any possibility of fire, and the bright Neon light on the top of each fuse flashes on so that there is clear indication which circuit has been broken.

When the cause of the fuse blow-out has been corrected, the Sightmaster is simply turned to the next setting and the electric current is restored. Each fuse is good for six separate blow-outs.

* * *

Silicone Insulation. The value of rewinding motors with silicone insulation is appraised in dollars-and-cents terms in a new 6-page brochure published by Dow Corning Corp., Midland, Mich. Featured are several complete case histories, some dating back to 11 years ago when silicone insulation first became available.

* * *

Water-Thinned Paints. Development of gloss and semi-gloss interior paints and industrial finishes using a water-thinned vehicle has been disclosed by Archer-Daniels-Midland Co., Minneapolis, Minnesota.

Announcement of these accomplishments with ADM's Arolon 110, an oil and water emulsion, and Arolon 304, was made at a symposium on water-based paints at the firm's research center in Minneapolis recently.

Representatives of about 50 paint manufacturing concerns attended the meeting, at which J. C. Konen, vice president in charge of ADM research, presided. W. G. Andrews, vice president of the ADM resin and plastics division, addressed the group briefly. The new developments were described by members of the research staff.

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Infrared Bakes Paint On G. E. Housings

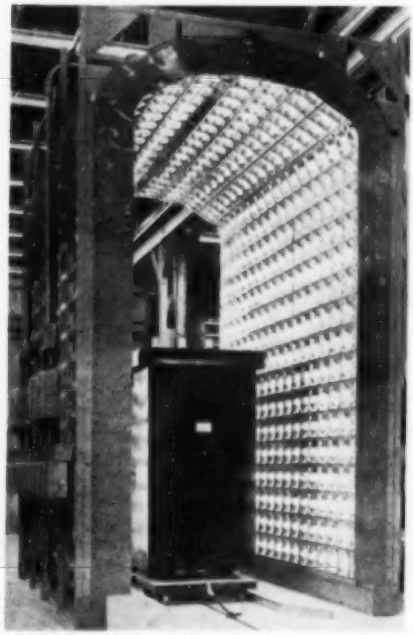
IN GENERAL ELECTRIC'S Hudson Falls, New York plant, paint is now being baked on large 12-ft. high capacitor housings, by conveying them through infrared ovens. The ovens, approximately 15-ft. long and 17-ft. high, are designed to utilize banks of General Electric infrared lamps developing 300° F. heat for the 30-minute bake.

Fostoria engineers cooperating with General Electric industrial heating specialists developed and constructed the big infrared oven to General Electric specifications. Requirements called for a radiant oven which would not only accommodate the largest housings, but also would bake smaller, 6-ft. high housings with equal efficiency.

Electrically, the oven is divided into several circuits, so that parts of the oven may be turned off when smaller sizes are being baked. The capacitor housings, used for outdoor switching stations and substations, are pulled through the oven at speeds varying from 6-in. to 12-in. per minute, by means of a floor-type conveyor. Paint used is a Glyptal* type formulated to withstand severe weather conditions.

While the General Electric paint specifications require a half-hour, 300° F. bake for average finishes, General Electric infrared lamps of varied wattage are positioned to make it possible to achieve the precise temperatures desired for units of different sizes. The new oven is equipped with a ventilating system as well as safety interlocks which control and prepurge the oven atmosphere before energization.

Editor's Note: This article and the photograph were supplied through courtesy of the Fostoria Pressed Steel Company, Fostoria, Ohio.



Oven has ventilation and safety controls.

*Trade-mark of General Electric Co.

Krentel, V. P. of MacDermid, Inc.

Stanley S. Krentel, V. P. of MacDermid Western, has been named Executive V. P. of MacDermid, Inc. He joined the company in 1945 as a technical sales representative for MacDermid's complete line of metal cleaning, plating and finishing products. In 1954, he was named vice president.

Mr. Krentel will continue to reside in Franklin, Mich. and operate from the MacDermid Western office and plant in Ferndale, Mich. He is a member of the Detroit Branch of American Electroplaters' Soc.

Salesmen's Approach

IN A COMPETITIVE field such as selling industrial finishes, most salesmen realize that potential buyers are not just waiting around. If they were, hundreds of other sales representatives would have gotten there early, eager to sell them. However, it should be borne in mind that in selling lacquers and enamels, probably hundreds of salesmen have been there before, but perhaps with no good results.

Unfortunately, too many salesmen attempt to break down the buyer's resistance with a price cutting gesture rather than presenting a practical attention getting feature. Didn't someone once say that, "the buyer's mind must be like a parachute; it doesn't work until it's open"? Of course, using the price reduction method to open the buyer's "parachute" (excuse me, mind) comes acropper with another Confucious-like statement to the effect that, "there never was a product offered which someone couldn't make worse and sell for less."

In selling industrial coatings, one of the major points to be stressed is service and technical know how. We have seen many representatives who have made us feel that they couldn't even sell us the correct time free of charge, yet they have scaled the heights with unusual displays of technical understanding and acumen, which never fails to impress their accounts. This is probably the most important aspect of selling a chem-

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ical material, such as organic coatings, but many times knowledge and service must be supplemented by good old fashioned salesmanship, plus all of the tried and true methods of "closing" a sale or deal.

In this vein we are reminded of the story of a visit to a village general store where almost any product could be purchased, but where the stock of important goods never seemed to be too large. The proprietor always blamed it on "lack of space." One visitor dissented and pointed out that a large storehouse existed in the rear of the building. The proprietor immediately invited his visitor to tour the storehouse. Well, it was quite obvious why nothing much of importance could be stocked there. Everywhere you looked you saw cans of red barn paint. The visitor naturally queried the storekeeper about this.

"That big paint salesman from 'X' company," he replied, "boy can he sell paint!"—*E. Ralltac.*

Clean Up The Place

THE SLOGAN about why, when and how you should "Clean Up and Paint Up" has become so familiar that many people overlook it. Nevertheless it is important for several reasons. Plants that are attractively painted and cleaned up help to promote better employee relations and, in turn, greater production. Clean plants are essential to quality finishes. Cleanliness is important as a safety factor and it is better insurance against fire.

Paint or oil-soaked rags heat up from chemical action, burst into flames. Clean-up after all painting jobs. Be safe all of the time.

An Urge to "Doctor Up" The Paint

YES, SOME manufacturers of paints, lacquers and enamels are having difficulty in maintaining their full laboratory and development staffs due to a lack of qualified chemical and technical personnel.

But all is not lost. It seems that in nearly every shop and department where organic finishes are used, there are amateur paint "chemists." Their qualifications have never been fully evaluated, but their proficiency in the use of additives appears to be the most intriguing phase of their operations.

These self-styled paint magicians seem to believe that no one else is aware of the possibilities of certain materials which might be added to the lacquers, enamels or synthetic materials they are using. For example, should a condition of orange peel exist in hot lacquer, there is a quick addition of a higher boiling solvent to give better flow-out. This in itself may be sound, but if the solvent used is not a solvent but a diluent, a few interesting possibilities may occur.

This situation presented itself in a plant recently when a budding "chemist" added some high flash naphtha to a hot spray lacquer. It must be admitted that the orange peel was cured but unfortunately the material started to sag and run. In addition partial precipitation of nitrocellulose occurred which made the lacquer milky and cloudy.

Another possible additive is sil-

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icones which can be used wisely or unwisely. A small amount of silicone may prevent silking in dipping operations or cratering; however, greater amounts do not improve but rather detract from the final finish.

The great difficulty really occurs when a trouble shooter comes in to find out what is wrong, and no one will admit to having experimented or resorted to some "doctoring up", or the use of any additives. Without any inkling that something unorthodox has been added, the paint salesman, service man or laboratory personnel may find it impossible to find out just what is wrong. Once a mistake of this sort is made the only consolation is that it probably will not occur again, but it certainly can cause some worry and anxious moments while it lasts.

In all fairness, it must be stated that some constructive ideas are submitted to the paint manufacturers. The finishing personnel are usually well qualified in their particular phase of finishing. Only when they deviate from their trade can a paraphrased Monroe Doctrine become apropos: "Paint chemistry for the paint chemist . . . . ."—*G.N.O.*

DeVilbiss Service Manual On Spray Equipment

A complete DeVilbiss Service manual totalling 405 pages and containing a full parts list as well as general information on installation, operation and maintenance is now available from The DeVilbiss Co., Toledo 1, Ohio.

Compiled at the request of resale outlets, the new manual provides up-to-date literature and reduces errors in ordering material and service parts. It replaces previous manuals which were kept current by the periodic mailing of replacement pages. Although replacement sheets will be available when requested, the company now plans to issue a new volume whenever sufficient changes accumulate to make it necessary. The manual is priced at $2.50, net, FOB, Toledo.

About Wrinkle Enamels

TO A CONCERN using wrinkle enamel *for the first time*, some headaches may be encountered. Hammertone can also be difficult, for some finishers. Ordinary smooth, solid-color baking enamels are so widely used and under so many different conditions that most of them are now almost foolproof. A clean surface plus reasonably correct application and a consistent baking procedure are usually all that are needed to assure a satisfactory finish.

Wrinkle enamel is slightly different however. The size of pattern, the degree of luster and the color can be changed by the way it is applied, by its viscosity, the air pressure used or by the baking technique. While a wrinkle enamel can be a useful material in the hands of a skilled and experienced sprayer, it can also be a bit difficult for the novice to master. Part of the difficulty can be simplified or eliminated entirely by buying your wrinkle enamel from a manufacturer who can guarantee the uniformity of his product.

We usually spray our wrinkle enamel at a viscosity of 60 seconds, as measured by a Zahn No. 2 cup, at a temperature of 72° F.; material pressure at 25-lbs. and air pressure of 65 lbs. We have found that by spraying two heavy coats we get the most consistent finish; we find that a deviation from this method gives us a coarser or finer pattern and also changes the degree of gloss in the finish.

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the material thoroughly before starting to spray. Before quitting for the day the material hose is rinsed and the spray gun head is removed and cleaned. A small amount of solvent is put on top of the material in the pressure tank, when not in use for a period of time, to prevent skinning.

We bake our material for 30 minutes at 300° F. We have found that if we let the freshly sprayed wrinkle enamel air dry for about 30 minutes before putting it into the oven, we get a brighter color. This is true of the material we use, but there are paints in which the time element between spraying and baking does not seem to make much difference.

When more than one piece is required for an assembly and the texture and finish must be uniform, even though sprayed at different times, it is suggested that the pieces be sprayed with a single coat of air dry lacquer and then the color will be identical; and should the size of the pattern vary a little, it will not be noticed as readily as a different shade or color might be.

Finally, have patience with your sprayer. Every good sprayer takes pride in his work and he may need a lot of encouragement in order to attain the perfection that he desires. —*X. Y. Z.*

Binks Spray Painting Class

Junior and Senior students, 22 of them from Fenton High School, Bensenville, Ill., learned the fine arts of spraying finishes recently, during a special one-day course at the Binks Spray Painting School. Explaining the fine points of a Binks model 18 spray gun is William Brooks, chief instructor.

This class, like the regularly scheduled sessions, was held in the Spray Painting equipment manufacturer's Chicago headquarters building.

Since 1949, Binks has offered free 5-day courses every month, except during July and August, to persons interested in the field of spray painting and painting equipment.

Junior and senior students from Fenton H. S. learn about new spray guns and spray painting.

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Keep Your Alkaline Cleaner Clean

DURING THE PROCESSING of metals, after fabrication or machining and prior to finishing, it may be necessary to use a hot alkaline type of cleaning bath. This step, as opposed to solvent degreasing, usually becomes imperative because of the nature of some of the cutting oils used in machine operations. It has been found that a well bananced, properly used alkaline cleaner will remove these soils efficiently, either before phosphate treatment or immediately prior to paint application.

Saponification of an alkaline material in the cleaner—that is the reaction with free fatty acids—forms soaps which reduce the surface tension. This is commonly called "wetting" or the ability to penetrate. The higher the pH or alkaline content, the better the dirt and oil removing properties of the cleaner. Other materials, used as additives, are often put into the cleaning solution to increase its wetting power and improve the ease of rinsing.

As with probably every product ever devised, alkaline cleaners are not foolproof; they can and do present some problems. Alkaline films, in general, are hard to remove by ordinary rinsing. Often a good alternating cold and hot rinse combination is necessary. Where an acid treatment of the proprietary phosphate or chromate type is used, the neutralization of the caustic surface is an accomplished fact. However, sole reliance on

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the acid treatment, instead of good rinsing, only reduces the efficiency of the acid material as a pretreatment step in the finishing cycle.

One problem that can easily appear is caused by plain ordinary neglect. The cleaner is used over and over so much that some of the oils in the solution are not emulsified; they may remain on the work or float to the top as an oily film which not only serves to recontaminate the metal surfaces as they are withdrawn from the cleaning solution. The oily film will prevent any efficient chemical reaction in the acid treatment and prevent formation of a good adhering surface for lacquers or enamels.

Local "hard water" conditions may be a cleaner deterrent. Where calcium and magnesium salts are present in appreciable quantity, they will react with the soaps to form insoluble precipitates which are difficult to remove. However, this trouble can be easily overcome by a cleaner formulation for the specific situations.

The use of the hot alkaline type cleaner may be an inexpensive and efficient method of oil and dirt removal, but if it is allowed to be taken for granted and neglected, the problems which arise can be many and costly. —*F.R.J.*

Allied Research Appoints Two

Charles W. Ostrander has been appointed Technical Director of Allied Research Products, Inc., Baltimore, Maryland, manufacturer of the Iridite line of chromate conversion coatings and ARP Plating Chemicals.

In his new capacity, Mr. Ostrander is responsible for coordinating research, development, technical service and manufacturing.

Raymond Stricklen has been named Laboratory Director in the development laboratory. In this capacity, he will direct all laboratory development projects as well as quality control operations relating to manufacturing processes and maintenance of industrial standards.

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Finish Hardness

ONE PROPERTY that is continually being sought after, in the finishing business, is hardness of film. Much has been done by many of the paint manufacturers' research laboratories. However, I often wonder if we are seeking the proverbial pot of gold at the end of the rainbow.

In iron metallurgy it has long been known that cast iron, relatively the impure form, is very hard. Wrought iron, the purest form, is the softest. Cast iron, being hard, is also brittle, while the softer wrought iron is more flexible and malleable. Industry, for the most part, has effected a compromise by the use of steel which is generally a "middle of the road" product, somewhere between the extremes of the cast and wrought irons. So too, in the finishing industry must we many times effect a compromise. We can obtain maximum hardness but we must remember that some flexibility will be sacrificed for this hardness.

In the automobile industry, when you have extreme hardness of film you will have finishes that are too brittle for practical use. That is, if a hard brittle finish is used it may very well be subject to chipping caused by flying gravel or dirt, which all automobiles encounter at some time or other. Some firms have chosen to remain with resin fortified lacquers rather than change to more brittle baked enamels.

The end use of a product should determine the amount of brittleness or flexibility its finish could have. If customers, particularly in the job finishing business can be educated to the real facts about these condi-

tions, many hardness complaints could be eliminated. It should be pointed out that moderation rather than extremes are usually desirable and, as happens in politics, quite often the "middle of the road" policy is best.—*S.E.N.*

Naz-Dar Executives Break Ground for New Plant

Robert Doran, President, John Pottage, Vice President, and other executives of the Naz-Dar Co., including J. V. O'Brien, head of Naz-Dar of Canada, were present for a ground breaking ceremony involving the firm's new Cherry Street plant. Located in the industrial section of Goose Island, just northwest of Chicago's loop, the new Naz-Dar installation is the first manufacturing plant built exclusively for the production of silk screen inks and sundry supplies.

Final plans were o.k.'d by executives of the firm only after a ten month study of the specific problems involved.

One of the safety features embodied in the approved blueprints calls for a self-contained explosion-proof mixing and storage vault for the volatile chemicals. Construction throughout the plant is of semi-explosion-proof nature with extra-thick bearing and foundation walls. A highly complicated system of fire prevention controls will be installed.

Production lines will permit maximum operating efficiency, not only for long ink runs, but for intermittent short runs which are common in this type of operation.

The laboratory and research department will be greatly expanded, although the current operation is the largest in the industry devoted to screen process ink development. Additional land has been purchased for future expansion and will currently function as a storage and parking area for plant employees.

New Multicolor Finish Color Card Offered

A new color card containing 34 color swatches of "Tweed" multicolor textured finish shows the wide variety of combinations available in decorator colors for interiors and office or home furniture. The multicolor "Tweed" one-coat plastic spray coating for use on wood, metal, plaster, masonry and dry wall is illustrated on a color card available from Raffi and Swanson, Inc., 101 Eames St., Wilmington, Massachusetts.

Left to Right: Kenneth Wittleder, Advertising; Eugene Beaudart, Director of Research; Peter Jankowski, Production Control; John Pottage, Vice President; J. V. O'Brien, Naz-Dar of Canada; Robert Doran, President; and Seymour Rieger, Plant Superintendent.

● SUPPLIES
● MATERIALS
● EQUIPMENT

New Hot Spray Package Unit Self Contained, Portable

The Spee-Flo Co., 720 Polk, Houston, Texas, has brought out two new hot spray models.

Completely self contained, the Chieftain series combines the Spee-Flo hot spray heater and reciprocating pump in a portable unit which carries the original five or ten gallon paint container. It is especially designed for industrial and maintenance painting requirements where long hose lines and portability are required.

The time and material saving advantages of hot spray are well known, but the Chieftain series is a unit especially designed for the maintenance and fabrication industries. In this field long hose length requirements have previously limited hot spray acceptance because such heaters simply were not available.

Now, the mobile Chieftain meets the need by providing hot spray temperatures for one or two guns and on hose lines up to 75-ft. in length.

Equipped with the U.L. approved Spee-Flo hot spray heater and divorced action pump, circulation from heater to gun is maintained for temperature control. The operator can select the paint heat he wants by simply turning the Dial-a-Matic controller. A single air and electrical connection places this complete spraying system in operation.

The 600 and 900 series models are equipped with a 2-kw. or a 3-kw. heater and a pump designed to spray up to a gallon per minute. A larger series Chieftain offers a similar assembly on a four wheeled cart and carries a 55-gallon paint drum.

For more data, circle 1 on colored card.

A new self-contained hot spray unit that permits long hose line spraying any where.

Rise of Heat Resistant Finish Saved Redesigning Product

A good heat resistant finish will not only lengthen the life of a product, and preserve its appearance but, according to Midland Industrial Finishes Co., Waukegan, Illinois, it can frequently overcome problems in redesign.

Such a problem was encountered by the makers of the well known Preway heater. The upper grille of this heater often reaches a surface

temperature of 550° F. Here, the use of an organic finish would have required raising the grille, at considerable redesign expense, in order to gain necessary protection for the lower part of the heater. However, tests with Sicon, a silicone heat resistant finish, showed that Sicon protected so well that redesign was not necessary.

Sicon is available in black, aluminum and many decorator colors.

For more data, circle 2 on colored card.

One-Man Barrel-Lift Does Five Jobs

One operator can safely and quickly perform as many as five operations in handling loaded 55-gallon steel drums with the improved safety Barrel-Lift shown here. The operations include raising, transporting, rotating, tilting and draining. All operations are performed with no undue strain to the operator. The filled drum is under perfect control at all times.

Self-locking safety stops prevent any accidental movement of the handle. Tilt locks secure the drum in vertical position during transportation, and horizontally while its contents are being drained. The drum returns to vertical position after it has been emptied.

One man handles a filled 55-gallon drum easily, quickly and safely.

Patented features reduce spillage, overflowing, leakage, drum damage and accidents. The unit has an adjustable leverage feature for handling various weight drums from 500 to 1000-lbs. The equipment is all-steel, welded construction with rigid steel tube base and structural tube supporting members. It has rubber-tired wheels and a ball bearing, swiveled rear caster.

The Barrel-Lift is shipped knocked-down and is easily assembled. This is a new addition to the line of materials handling equipment and accessories produced by Morse Mfg. Co., Inc., 727 Manlius St., East Syracuse, New York.

For more data, circle 3 on colored card.

Allied Research Announces Four New Iridite Finishes

Allied Research Products, Inc., 4004 E. Monument St., Baltimore 5, Md., manufacturer of the Iridite line of chromate conversion coatings, announces the introduction of four new products in the Iridite family.

The first of these is designated as Iridite No. 5-P. This is a powdered concentrate which produces a yellow iridescent coating on zinc and cadmium plate, galvanized iron and zinc die castings. The resultant finish is highly corrosion resistant, and it makes an excellent base for paint.

Iridite No. 8-4 is an all-purpose liquid chromate for all forms of zinc and cadmium. It can be used to provide a bright finish or, in applications where government specifications for supplementary chromate treatments must be met, it can provide a highly protective coating on zinc plate, cadmium plate, zinc base die castings or galvanized steel. [*Cont'd on page 110*]

The third new product, Iridite No. 12-P, is a powdered material designed to provide a one-dip, clear, blue-bright finish on zinc-plated parts. It can be used to replace conventional nitric acid dips or other "homemade" mixes, as well as for installations where supplementary dips of any type have not been used. Iridite No. 12-P will produce a bright final finish in combination with the use of ARP Brighteners in the plating bath.

The fourth new addition is Iridite No. 14-9, a powdered concentrate designed to provide a one-dip, clear protective treatment for aluminum surfaces. As this compound operates at extremely low concentrations, it is especially adaptable to applications where low cost is essential. The clear film produced from a single dip in Iridite No. 14-9 provides an excellent degree of corrosion protection and meets the requirements of specification MIL-C-5541.

For more data, circle 4 on colored card.

New Trolley For "Bush-Lock" Overhead Cable Conveyor

A new heavy duty trolley, designed for use with the ⅜-in. "Bush-Lock" overhead cable conveyor, has been developed by The E. W. Buschman Co., Clifton and Spring Grove Avenues, Cincinnati 32, Ohio.

Designated "T-10," the new trolley has wheels that are pressure lubricated, a special nut to protect the grease fitting, a completely enclosed back, and a felt hub seal. This design is recommended for applications involving industrial washers, paint spray booths and other operating conditions where excessive dust, moisture or temperatures up to 150° F. are encountered. (For higher temperatures, the "T-10 T" with special seal is recommended.)

The new T-10 comes in both two and four-wheel models, with nominal capacities of 250-lbs. and 375-lbs., respectively. Capacities rate downward for various operating conditions.

The wheels, equipped with eight precision ball bearings running on a hardened inner race, are turned from hardened steel stock. Treads are contoured for efficient line contact with 3-in. Jr. T Tracks, to assure smooth, easy rolling.

For more data, circle 5 on colored card.

Balcrank's Stainless Steel Reciprocating Pump

A new stainless steel reciprocating pump for pumping finishing materials and other liquids from drums or other containers, is announced by Balcrank Inc., 41 Disney St., Cincinnati 9, Ohio. It is an air-operated pump.

Balcrank engineers spent several years in research before they developed a reciprocating pump with stainless steel parts that could be machined and even cast in molds.

Many industries—such as aircraft and automobile manufacturing—use "strippers" to remove old paint, and "brighteners" to revitalize natural metal surfaces, such as aluminum aircraft bodies and wings. These are corrosive materials which etch away metals of lesser stature than stainless steel. Moreover, all pumps use seals and "cups" which have to be replaced periodically. With the Balcrank pump, it is only a few minutes work.

The Balcrank stainless steel pump will handle fluids ranging in temper-

PLASTISOL PERFECT...

K & B OVENS!

Kirk & Blum Oven installation in the plant of a leading manufacturer of Plastisol coatings. Oven measures 12′ x 12′ x 12′ and is used for both experimental and production operations.

Kirk & Blum Ovens are popular throughout the Plastisol industry where uniform temperatures are required. The oven illustrated is operated at temperature ranges up to 600° F. with temperature variations throughout the oven of less than 5° F.

The oven is used to determine experimentally curing and baking temperatures, as well as for batch production of very large items.

Whatever your oven needs consult Kirk & Blum. Write for new "Ovens for Industry" catalog. The Kirk & Blum Mfg. Co., 3131 Forrer St., Cincinnati 9, Ohio.

KIRK & BLUM

OVENS FOR INDUSTRY

ature from —30° F. to 220° F., at discharge outlet pressures of 1½ times the incoming air pressure. It will operate on an air supply range of 30 to 200-lbs. per square inch, and pump from one to 20 gallons of fluid per minute, depending on the air pressure used. Material is delivered in equal amounts on both up and down strokes of the pump, without pulsation. All cups and seals meet the requirements of pumping acids, finishing materials, strippers, brighteners and corrosive liquids of various kinds.

The air motor that operates the pump is entirely separate, which makes it impossible for fluid being pumped to mix with the air mechanism.

For more data, circle 6 on colored card.

Mask Sray Decoration of Rubber Balls and . . . .

Colorful rubber balls and other round objects can now be spray decorated rapidly, easily and economically by the use of a new masking method developed by Conforming Matrix Corp., 331 Toledo Factories Bldg., Toledo 2, Ohio.

With these new masking devices, bright, durable colors can be painted —and you obtain close register and fine definition.

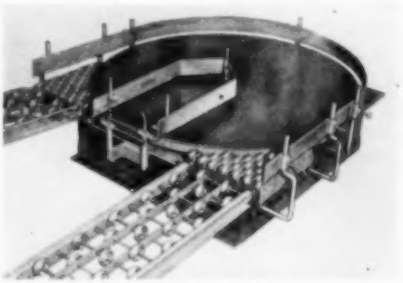
Stencil masks and decorated rubber balls.

The clean line definition acceptable for toys can now be had in a stencil type mask for the application for multiple color design on smooth, round cylindrical or other semi-spherical shapes. The new masks are made of a special electroformed nickel which combines the desired qualities of strength and ductility with rigidity, so that mask shape is retained over an extended life, and is capable of repeated use between cleanings.

For more data, circle 7 on colored card.

Conveyor Powered Turntable

A new powered turntable designed for use with powered or gravity conveyors is offered by Samuel Olson Mfg. Co., Inc., 2418 Bloomingdale Ave., Chicago, Ill. Available with adjustable legs to bring the top to any practical height, the new turntable



The turntable is adjustable for height.

is designed to transfer packages or loads at either a 90° or 180° turn.

The 48-in. disc is direct-driven by a gearmotor at 25-rpm to produce approximately 300-ft. per minute rotation. The disc is solidly supported by four rubber-tired ball bearing wheels which insure an even top surface under heavy loads.

Ball bearing wheel feeder sections

Ask us to prove it!

Oronite* ISOPHTHALIC provides harder films, greater durability, better gloss, *at lower cost!*

Just contact any Oronite office and request a demonstration of the superior properties of Isophthalic based coatings—whatever your individual application. Resin samples are available for all alkyd applications. These samples can be furnished you together with complete data on their particular formulations—also instructions for their preparation. You can then prove Isophthalic qualities to your own standards.

It's worth your time *now* to check ISOPHTHALIC—possibly the most important new major raw material for the surface coatings industry in the past half century.

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*T.M. 4351

assist in the smooth transfer of packages from conveyor to disc and back to conveyor. The feeder sections may be placed at any two corners of the turntable frame.

For more data, circle 8 on colored card.

Synthetic Pearlescent Pigment

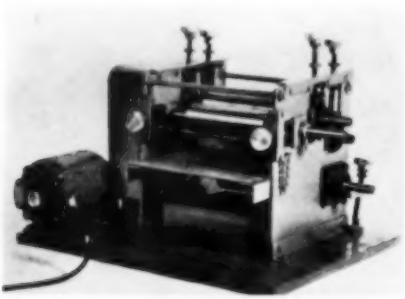
Rona Laboratories, Inc., E. 21st & E. 22nd Sts., Bayonne, N. J., manufacturer of natural and synthetic pearlescent pigments, announces the production of a new synthetic pearlescent pigment which does not contain lead and which is, for all practical purposes, non-toxic.

The company is producing this product at its new plant in Bayonne, N. J., and offers to furnish all interested companies any required test samples or other technical information available concerning the use of this product.

For more data, circle 9 on colored card.

New Walco Laboratory Coater

A new laboratory coater is announced by L. R. Wallace & Co., 172 N. Vernon Ave., Pasadena, Calif. It has such features as a pick-up roll which picks up the coating medium from a reservoir, transfers to a transfer roll and to the coating roll for accurate coating control.



New bench-type laboratory roller coater.

This Model 57-L-1 also has an adjustable bottom roll, eliminating the necessity of disturbing the coating roll adjustment, for a variety of material thicknesses. It is available in steel and rubber rolls for inks or lacquers, enamels and a large variety of coating materials. Transfer and pick-up rolls are 2½-in. in diameter. Spreader and pressure rolls are 4-in. Rolls are made in lengths of from 6-in. to 48-in.

For more data, circle 10 on colored card.

New Air-Powered Transfer Pump Starts, Stops Automatically

A new, lightweight (13½-lbs.) fluid transfer pump that automatically starts and stops as the operator squeezes or releases trigger on a high-volume gasoline-type valve, is announced by Gray Co., Inc., 1099 Sibley St., N.E., Minneapolis, Minn.

How the Flo-Matic unit is used for transferring liquid from a drum to a smaller container. It may be used for mixing and measuring too.

This air-powered Graco Direct-From-Drum pump is spark-free, fire-

INCREASE PAINT SPRAY BOOTH EFFICIENCY .... AND SAVE TIME, FLOOR SPACE, MONEY!

Photo Courtesy Argo Lamp Co., Philadelphia, Pa.

. . . with R P Paint Arrestors

The Argo Lamp Co. found R P Paint Arrestors more efficient, more economical in arresting paint overspray than the more elaborate and expensive system previously used. Investigate the many advantages of these inexpensive, replaceable pads to increase booth efficiency, reduce floor-space requirements and maintenance costs. Write today.

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RONCI SPEEDIP WHIRL ENAMELER

Made in Three Sizes, R-100, R-200 and R-300. Capacities 312-cu.in. to 4400-cu.in.

IDEAL FOR LACQUERING AND ENAMELING PARTS UP TO 20 INCHES IN LENGTH

CUTS COSTS, SAVES UP TO 80% OF MATERIAL

Carries up to hundreds of lbs. per load, and up to 30 loads per hour can be coated with lacquer or enamel in these machines.

All operations are within the machine. Dipping tank is raised, submerging the parts in the basket, and then lowered and the parts whirled, throwing off excess materials. No additional outside tanks required; no cleaning necessary when changing colors; no loss of material.

Prompt Deliveries

Write for further information and submit samples to be coated.

RONCI MACHINE COMPANY
A Division of F. Ronci Co., Inc.
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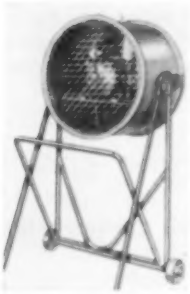
proof and cannot burn out. The fluid remains "sealed-in" from the original 55-gallon drum to the point of use.

Pump operates either in open head or 2-in. bung opening of original drums. It will actually empty a full size drum faster than the fluid can be poured from the bung. There is no pressure in the drum at any time.

For more data, circle 11 on colored card.

Portable Industrial Fan



A portable cooling fan that can be anchored to the floor for permanent installation or moved into any desired position on steel wheels, is offered by Detroit Blower Corp., 9867 Pacific Avenue, Franklin Park, Illinois. Known as type "P," the axial-airfoil fan is designed for a wide variety of industrial uses.

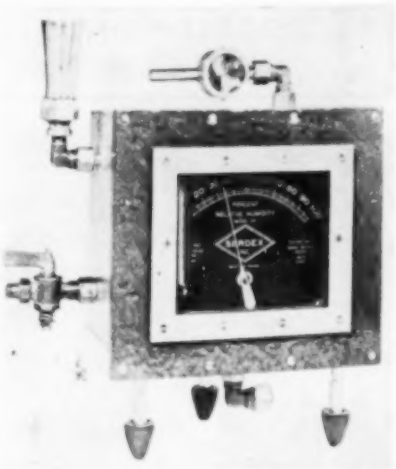
A swivel mounting permits the air blast to be directed either up or down in a 90° arc. The fan is also particularly adaptable to cooling and drying functions.

For more data, circle 12 on colored card.

Remote Humidity Indicator

A new, easy-to-use and extremely versatile remote humidity indicator, designed for measuring humidity of closed areas is now available from Serdex, Inc., 91 Cambridge St., Boston 14, Mass. This unit has wide application in the laboratory, for research, and in plant operations.

The indicator can be located in office, laboratory or control room away from the area to be measured. An air line is run into the area to be sampled. A vacuum pump or line draws sampled air through the indicator.



It's accurate to within plus or minus 1½%.

It is easy to install. Only two connections are necessary—one from the inlet at the bottom of the indicator case to the air line from the container or area sampled, the other from an outlet at the top of the case to a vacuum pump or line. No wiring is needed, since operation is mechanical. No conversion charts are necessary. For production use, the indicator can be installed permanently to give continuous humidity readings.

For more data, circle 13 on colored card.

Helps Vacuum Coating in Humid Weather

Recently completed field tests prove that the new NRC mechanically refrigerated cold trap assembly solves the problem of keeping vacuum coating cycles short on warm, humid days. It liminates the lost production and increased operating costs which have always plagued vacuum coater opera-

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If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity . . .

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No matter which way you buy it, you can be sure that every square inch will stay SOFT and Tacky until the very last bit is used up! The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is Spontaneous Combustion Proof, Lint-Free, and Wax Free. Gives a sparkling speck-free Finish every time. Clean and Sanitary. No waste.

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tors during periods of high humidity. During these periods, the increased amount of water which has to be exhausted from the coater adds such a load that pump-down frequently takes three times longer than on cold-dry days. This is especially troublesome because high humidity ordinarily is encountered during the summer, the period when demand for vacuum coating is usually at a peak. By freezing out the water vapor, the NRC cold trap relieves the pumping system of this added load and assures that pump-down times remain as they were in cold-dry weather.

In a typical test, this cold-trap assembly was installed on one of the three NRC production units operated by a contract coater. The resulting increase in output of both first and second surface work averaged 140%. A company official remarked that he would never again operate a coater which didn't have this system. Then he ordered two more for his other coaters.

Made by N. R. C. Equipment Corp., 160 Charlemont St., Newton Highlands 61, Massachusetts.
For more data, circle 14 on colored card.

New Dual-Purpose Colorimeter

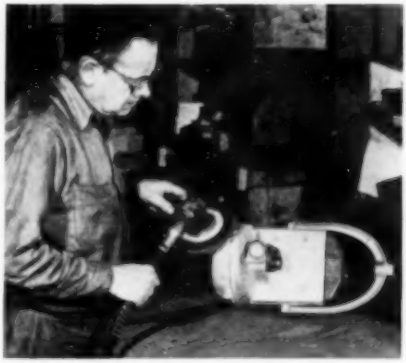
To provide for color difference determination in temperature-sensitive materials and to make accurate color measurements possible in dusty atmospheres, Instrument Development Laboratories, Inc., 67 Mechanic St., Attleboro, Mass., has added a new cooling system and air filter to the Model C Color-Eye.

The Model C Color-Eye is a colorimeter designed for quality control of industrial colors in raw materials and in finished products. It performs the dual functions of an abridged spectrophotometer and a tri-stimulus colorphotometer in analyzing color formulations, determining metameric conditions and quickly measuring color differences in hue, value and chroma.

The new cooling system reduces the temperature rise at sample ports and maintains it at a point where rapid analysis of colors on temperature-sensitive materials is possible. The replacement-type filter removes dust from the incoming air to prevent dirt deposition from decreasing the sensitivity of the optics.
For more data, circle 15 on colored card.

Flexible Tool Shaft

The Stow Mfg. Co., 73 Shear St., Binghampton, N. Y., offers a flexible tool shaft that makes a lightweight portable production tool for grinding, sanding, buffing and other finishing



Light in weight, fast, efficient and safe.

operations. The Model 40 tool shaft consists of a ⅜-in. diameter music core that rotates inside a rubber covered casing. It is furnished standard with a ball bearing motor connection and a ball bearing handpiece with a removable wheel arbor. A Model R M-40 1:1 ratio angle head can be

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used in place of the handpiece, as shown in the picture.

This new flexible shaft can be connected up to any motor by just attaching the motor connection to the motor. Because it is light in weight this tool is not fatiguing to operators using it for long periods at a time. It will transmit up to ½-hp. at speeds up to 6900-rpm.

For more data, circle 16 on colored card.

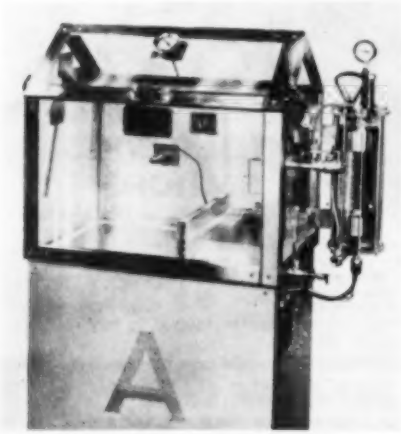
All-Lucite Chamber Shows Salt Spray Testing

A new, all-Lucite salt spray test chamber for determining the salt fog corrosion resistance of materials and components, is announced by Associated Testing Laboratories, 412 Clinton Rd., Caldwell, N. J.

Operation is simple. The chamber, when connected to a low pressure air supply, produces a fine mist, and reaches test conditions within 15 minutes. Specimens to be tested are then suspended from Lucite hanger rods which are supplied with the chamber. Bulkier components can be placed on the bottom of the chamber and supported by Lucite rods to avoid contact with the salt solution. The all-Lucite construction assures complete visibility of the test in progress, from all angles.

The chamber is equipped with temperature controllers and indicators.

For more data, circle 17 on colored card.



You can see the salt spray test in progress.

Dry Chemical Extinguishers

Two new pressurized dry chemical portable fire extinguishers are announced by Walter Kidde & Co., Inc., Belleville, N. J. The new streamlined models come in 20-lb. and 30-lb. capacities.

The new designs stress simplified, self-evident operation for anyone picking up a unit in a fire emergency. He simply aims the discharge horn at the fire and pulls the trigger. Immediately a cloud of fire killing dry chemical envelops the blaze. There is no trigger locking pin to remove, no valve to turn, no inverting, and no bumping.

For more data, circle 18 on colored card.

Waterless Aftercooler For Compressed Air Lines

Airlenco, Inc., 143 N. Logan St., Elyria, Ohio, announces the addition to its line of a waterless aftercooler, for removing oil and water from compressed air lines. The unit consists of four standard Airlenco air filters, connected in series and mounted so as to occupy a floor space of only 18-in. square.

The Ailenco filter is a 36-in. cylinder, 6-in. in diameter, in which is mounted a smaller cylinder having a perforated bottom and filled with Fiberglas. Compressed air enters at the top, flows downward, then up through the Fiberglas, which acts as a series of baffles.

The filters in series act effectively

as condensers. In addition to removing oil from the lines, they condense the water vapor present into entrained moisture and remove it from the lines. Four of these filters in series accomplish a much more rapid heat transfer and condensation of water vapor than occurs in a run of several hundred feet of relatively thick-walled 2-in. pipe. The primary advantage is the elimination of the need for using water as a cooling agent, making the cost of the operation negligible as compared with the expense of using a substantial flow of water.

For more data, circle 19 on colored card.

Permanent-Magnet Conveyor Parts-Carrier

A new magnetic unit for carrying parts along on overhead conveyors is announced by the Magnetool Division of Multifinish Mfg. Co., 26341 W. Eight Mile Road, Detroit 19, Mich.

Made with permanent magnets, the new Magne-Carrier completely eliminates the need for hooks, hangers and the fabrication of special conveyor devices. Parts are placed on the magnetic tines of the unit and are securely held for conveying through such processes as cleaning, rinsing, painting, drying, etc. According to the manufacturer, the use of Magne-Carriers simplifies conveyor parts-handling, and effects substantial savings in labor and equipment costs.

For more data, circle 20 on colored card.

Expansion Caulking Compound

A new type of expansion joint material and caulking compound which elongates 325% through the normal temperature range of 70 to 80° F., has been introduced by A. C. Horn Co., Inc., subsidiary of Sun Chemical Corp., Long Island City, N. Y.

Known as Hornflex Rubber Expansion Joint and Caulking Compound, this new material maintains a tight seal of joints by squeezing and stretching with any movement. "Hornflex" is especially effective in curtain wall construction and on surfaces where adhesion is difficult.

Among the applications of the compound are the filling and sealing of surface joints in bridges, buildings, highways and swimming pools, and between metal panels of stainless or enameled steel, and building materials of dissimilar surface density and texture.

"Hornflex" is a two-component product mixed prior to use and applied either by caulking gun or knife.

For more data, circle 21 on colored card.

Cold Solvent Emulsion Cleaner

Octagon Process, Inc., 28 Bank St., Staten Island, N. Y., has developed a new general purpose cold solvent emulsion metal cleaner for rapid, highly effective cleaning of both ferrous and non-ferrous metal parts—at normal room temperature.

Mighty-Mulse 563 is effective on lubricating oil, grease, buffing compounds and general soil found in normal metal working operations. Oils, greases, etc., dissolve easily in the Mighty-Mulse 563 solution, and are emulsified when rinsed in water. Parts with slotted or tapped holes or with irregular openings or crevices are cleaned perfectly with Mighty-Mulse 563. This material is harmless to nose, throat or hands. It will not jell, withstands heavy oil contamination, and has a pleasant odor; is used at normal room temperatures of 70° to 90° F.

Parts are dipped or soaked in a tank charged with M-M 563. Parts are left in tank from seconds to min-

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"SCIENTIFIC PAINT EVALUATION," (321 pages)	9.00

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1142 N. Meridian St. Indianapolis 4, Ind.

utes depending upon the type of soil encountered. In many cases, it is the practice to leave a complete batch of parts in the tank until they are needed.

After soaking, parts are rinsed in water, warm if possible, or pressure sprayed. Parts are then removed clean and ready for further work, repair or assembly.

For more data, circle 22 on colored card.

End-O-Rust Removes Rust

End-O-Rust, a mildly acidic liquid, can be applied by brush, spray or dip. It removes rust deposits.

End-O-Rust is self limiting in its action when applied by brush or spray, in that when the surface has dried, no further action will take place unless the area is re-wetted with an additional solution. When dipping, action will continue until the metal has been removed from the solution and allowed to dry.

Under normal conditions, no rinsing of the treated metal is required.

This rust remover is a product of Toledo Paint & Chemical Co., 33 Blucher St., Toledo, Ohio.

For more data, circle 23 on colored card.

Continuous Vacuum Metallizer

Faster metallic coating of plastic film and sheeting, such as Mylar, acetate, cellophane, and butyrate, as well as of condenser paper, textile fabrics, and even thin sheet steel, is possible with a new line of Stokes vacuum equipment for continuous roll metallizing, announced by F. J. Stokes Machine Co., 5500 Tabor Road, Philadelphia 20, Pennsylvania.

The Stokes metallizing equipment represents a completely new approach to the problem of continuous deposition of metal on a moving web of

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material. The new units have only a single vacuum chamber and thus need only a single vacuum pumping system. These continuous roll metallizing units can coat material in widths of 6, 24, 36, 48, 54 or 60-in., at speeds up to 500-ft. per minute. Rolls up to 24-in. in diameter can be accommodated in the units, and material ranging in thickness from .0005 up to .0020-in. can be successfully coated on a continuous basis. (A 24-inch diameter roll of thin gage plastic film, for example, might contain as much as 40,000-ft. of material, depending on the size of the core of the roll.)

The Stokes metallizing units are designed to deposit a brilliant, uniform coating of metal over the entire width of the material, with no dark or "burned" areas.

For more data, circle 24 on colored card.

Porcelain Finish Repair Kit

Chip-X is a repair finish for chipped and damaged places in a porcelain or vitreous enamel finish. Chip-X is available in small service kits containing powders, binder and a baking agent—sufficient material for the repairing of 100 to 200 small chips. It is also available ready-mixed, in white or colors, in pints, quarts and gallons.

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1025 Broad St., Newark 2, N. J.
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HAMMOND SOLVENTS RECOVERY SERVICE
241 Brunswick St., Hammond, Ind.

Chip-X withstands most acids, boiling water, and the heat of an oven door without fading or turning color with age. Its glossy, brilliant surface withstands the roughest use. The name and address: Chip-X, Box 121, Claremont, California.

For more data, circle 25 on colored card.

Alkaline Derusting Product

A full year of field testing has proved that Wyandotte Ferlon will give fast action without injuring sound metal. Made for use in tanks, either with or without current, Ferlon removes rust, oxide, light scale, oil, grease, paint and smut. You can use

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"To Get Better Results In Your Finishing Department" (2 Parts), price 10 cents.

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"Industrial Paint Samples 'Big Deal'," price 10 cents per copy.

"Cleaning and Conditioning Metal Surfaces for Coatings," price 20 cents per copy.

"A Method Engineer Analyzes Paint Selling," price 10 cents per copy.

"Filler, The Theory and Technique of Application," price 10 cents per copy.

"Finishing System for Magnesium," price 10 cents per copy.

"Automatic Viscosity Control for Mass Production Finishing," price 10 cents per copy.

"Paint Users' Tests: Be Fair; Get Results," 10 cents per copy.

"Spray Problems With Hot Lacquers," price 10 cents per copy.

"Abrasives, Their Use in Surface Preparation," price 10 cents per copy.

"Use Push Button Spray to Touch Up Marred Finish," price 10 cents per copy.

"What's the Big Plus Value in Selling Finishes?", price 10 cents per copy.

Automobile Finishing, "The Ford Finish," price 10 cents per copy.

Piano Finishing, "Gulbransen's Piano Finish," price 10 cents per copy.

"New Finishing Setup for Fluorescent Lighting Fixtures," price 10 cents per copy.

"What Makes Our Finishing Costs So High?", price 10 cents per copy.

"Lithographing Metal Sheets for Cans," price 10 cents per copy.

"Idolizing Low Gallon Cost Can Ruin a Good Industry," price 10 cents per copy.

"Viscosity Measurements," price 10 cents per copy.

"Finishing Wood Turnings in A Tumbling Barrel," price 10 cents per copy.

"Gold Lacquer on Outdoor Products," price 10 cents per copy.

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one bath as both cleaner and rust or oxide removing dip. This application of Ferlon eliminates two or more steps . . . . and shortens processing time up to 30%.

A special feature is a bottle of detergent and rinse promoter which is packed in each drum of Ferlon. This permits optional addition of the promoter. It is included in both the 150-lb. and 400-lb. drums of Ferlon. A product of Wyandotte Chemicals Corp., Wyandotte, Mich., and Los Nietos, California.

For more data, circle 26 on colored card.

Chromate Coating Produces Iridescent Films

Conversion Chemical Corp., Rockville, Conn., announces the development of a new powdered chromate coating, Kenvert No. 18, for producing iridescent films on zinc, cadmium, copper, brass and zinc die castings.

The product may be adjusted to give varying iridescent bronze shades through varying the pH, concentration, and the time of immersion. Corrosion protection is ample to meet all Government specifications; and the bath can be operated through controlled temperature to produce films which are hard when wet, and which will not bruise in bulk handling.

For more data, circle 27 on colored card.

Cleans Compressed Air

The contamination present in all air that comes from compressors, the damage it causes, and the simple, inexpensive way by which the Logan Aridifier prevents such trouble is the subject matter of this new Logan Engineering catalog.

Users of pneumatic tools and spray equipment will especially be interested in the Aridifier's removal of 92%

Thompson Fast-Dry Production Primers can be used on any clean steel surface . . . you can topcoat them in just a few minutes . . . and they give you excellent adhesion and corrosion-resistance. These superior primers come in five colors and white. Write for literature, including technical data.

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of all moisture, oil, dirt and fine scale in the air line before such foreign matter takes its costly toll in damaged equipment and fouled work.

Operated by the compressed air passing through it, the Aridifier impales the foreign matter on whirling rotor blades, then hurls the impurities by centrifugal force against the inside wall of the unit. From this vertical inner wall, the contamination and moisture drip by gravity force into a trap. The air emerging through the Aridifier is dry, clean and safe. Tool and sprayer life is greatly lengthened and performance improved.

Once installed, the air cleaner requires no maintenance other than occasional cleaning of the trap section where impurities collect. The Aridifier Division, Logan Engineering Co., 4901 W. Lawrence Ave., Chicago 30.

For more data, circle 28 on colored card.

Resists Hydraulic Fluid

Pliogard, a new synthetic rubber enamel for protecting the finish on hydraulically operated equipment, has recently been placed on the market by the Saran Protective Coatings Co., 2415 Burdette Ave., Ferndale 20, Mich.

Automation and mechanical handling, brought about by applied hydraulics, present new maintenance problems. With hydraulic fluids operating under high pressures, some leakage is inevitable. Most hydraulic fluids are corrosive in their nature and attack and destroy protective and decorative paints and enamels. Pliogard, it is claimed, eliminates such trouble in the presence of most of the newer types of non-flammable hydraulic fluids.

In the automotive field, where automation has reached a high state of development, Pliogard is being specified as a protective and decorative finish for hydraulically operated equipment.

For more data, circle 29 on colored card.

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MWP Co. Cleans Wool Polishing Bonnets and Pads

The Memphis Wool Processing Co., 3286 Spottswood, Memphis, Tenn., cleans polishing and compounding bonnets and pads by a new method. There is no shrinkage. The cleaned bonnets and pads come back leather soft and pliable, perfectly cleaned and combed.

For extra fine finishes, bonnets and pads should be cleaned often. They can be cleaned from six to ten times —an excellent way to cut production costs. Cleaned bonnets and pads are returned in approximately ten days with return postage paid.

For more data, circle 30 on colored card.

Wyandotte Chemicals Appoints New District Managers

Wyandotte Chemicals announces the following appointments.

W. C. Van Keuren has been made manager of New York District office. Mr. Van Keuren joined Wyandotte Chemicals Boston District sales staff in 1945 and became manager of Wyandotte's Philadelphia office in 1952.

John K. Stanz, for the past five years a member of the Philadelphia District office sales staff, succeeds Mr. Van Keuren as district sales manager.

Robert W. Haberl has been made sales manager of Wyandotte's Kansas City District. Mr. Haberl had been acting manager since the death of Gail Eldridge, having been transferred from a sales management position at the Wyandotte office.

A. J. (Larry) Bettelheim, Wyandotte's New York District sales manager for 17 years, was granted early retirement.

Brochure Describes Radiant Heat for Metal Processing

A comprehensive new brochure that describes the various applications of radiant heating equipment in metal processing, is offered free by Fostoria Pressed Steel Corp., Fostoria, Ohio.

Eighteen typical applications are described in capsule case-history form. Data on product heating problems, processing temperatures, time cycles and oven design are included.

Of special interest is a description of Fostoria's four sources of infrared energy and where they are best applied to metal cleaning and paint baking processes.

For Your Convenience

Use INDUSTRIAL FINISHING magazine's "Reader Service" return cards to obtain further information on products described and illustrated in the "Materials; Supplies; Equipment" section which precedes this page; also, to receive further information on what manufacturers have to offer—literature, products, supplies, services, etc., as mentioned on the following pages.

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Some of the returned cards we receive are not filled in correctly—and we cannot read a few of the hand written names and addresses. Before returning a card, please check to see if it is marked correctly—and legibly. Thank you.—Editor.

"Pearlescent" Finishes. Synthetic, but with the natural look, in air dry or bake. For use on metal, plastic, wood or glass. Rona Laboratories, Inc., East 21st & East 22nd St., Bayonne 2, N. J.

For more data, circle 31 on colored card.

"Dulux" Finish by DuPont is formulated especially for roller coating operations. It offers superior resistance to cracking and chipping, and performs equally well after fabrication. Stands weather extremes and sudden temperature changes. Dulux has superior covering properties, hardness and flexibility, goes on smoothly and evenly at high speeds. Roller coat operation with Dulux can speed production and lower the cost. Complete information from E. I. duPont deNemours & Co., Inc., Finishes Division, Wilmington 98, Delaware.

For more data, circle 32 on colored card.

Masking Caps, Plugs. Shurclose Seal Co., 3000 E. Grand Blvd., Detroit 2, Michigan, has issued a new 4-page catalog on Shurclose Caps and Plugs. Complete specifications are given for both rubber and plastic closures for the protection, sealing or masking of threaded parts, pipe ends or tubing. Seven styles of stock sizes are covered by the specifications.

For more data, circle 33 on colored card.

Safety Shutoff Valves—A 12 page bulletin in color, including numerous photographs and illustrations, has been published by The North American Mfg. Co., 4455 E. 71st St., Cleveland 5, Ohio, describing its complete line of Series 22 Safety Shutoff Valves.

For more data, circle 34 on colored card.

Alkaline Rust Remover. A new illustrated 4-page folder describing Turco Alkaline Rust Remover, a chemical compound that removes rust, paint and primer from metal surfaces in two simple steps, without the use of acids, has been released by Turco Products, Inc., 6135 South Central Ave., Los Angeles 1, California, manufacturer of specialized industrial chemical processing compounds.

For more data, circle 35 on colored card.

Industrial FINISHING

August, 1957, Issue

READER SERVICE DEPARTMENT

Without obligation, please see that we receive further information and manufacturers' literature identified by the numbers circled on this card:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108		
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Conveyorized Systems for wood and metal products, by flow coating, spraying, etc. America's finest furniture is finished on these DeBurgh conveyorized systems. Write George Koch Sons, Inc., Evansville 4, Ind., for free appraisal of your plant's requirement.

For more data, circle 36 on colored card.

"Speck-Free" Finishes every time when you use Bond Tack Cloth. Save time and work with Bond Tack Cloths in handy rolls, bulk, white or gold, in three different kinds of cloth. Bond Chemical Products Co., 2641 N. Clybourn Ave., Chicago 14, Illinois.

For more data, circle 37 on colored card.

"Trichlorethylene" by Dow Chemical Co., Midland, Michigan, does a superior degreasing job. Removes oils, tars and resins. Special inhibitors keep it stable after repeated degreasing and distillation runs. Is nonflammable and nonexplosive at ordinary temperatures.

For more data, circle 38 on colored card.

Dupor No. 4 Respirator has double filters for easy breathing and greatest filtration of paint spray, dust and fumes. Soft rubber face mask gives an airtight fit. Patened Dupor valves bring in clean air and throw off breathed air. Weighs only 4-oz. H. S. Cover, P. O. Box 2508, South Bend 14, Ind.

For more data, circle 39 on colored card.

Metal Paints Formulated with Dow latex give metal fabricators safer working conditions and lower fire insurance rates because water replaces the flammable solvents used in ordinary paints. Disagreeable odors are reduced to a minimum. Technical information on latex metal finishes are available from The Dow Chemical Co., Plastics Sales Dept. PL1840Z-1, Midland, Michigan.

For more data, circle 40 on colored card.

Multicolor One-Coat Finish called "Spex" is featured by V. J. Dolan & Co., Inc., 1830 N. Laramie Ave., Chicago 39, Ill. Provides a combination of two or more distinct contrast or harmonizing colors in one coat with standard spray equipment. Hides all surface irregularities. Suitable for finishing wood, metal, plastic, brick, concrete and all types of composition board. Dries like lacquer. Available in a great number of attractive stock colors. Color card available.

For more data, circle 41 on colored card.

"Multakolor" Paints in two or more colors can be sprayed in one coat, with one gun from one container. Dries in 15 minutes to touch; can be handled in one hour. Resistant to alcohol, grease, oil and inks. Excellent for hiding small imperfections. Stock colors can be intermixed to obtain many interesting patterns. United Lacquer Mfg. Corp., 1001 W. Elizabeth Ave., Linden, N. J.

For more data, circle 42 on colored card.

"Turcoat" Phosphating Booklet gives the solution to many paint adhesion problems. Lists complete line of Turcoat materials that assure permanent paint adhesion of organic finishes to metal parts and products. Turco representatives in all parts of the country can give immediate service and recommendations on any processing set-up prior to the use of organic finishes. Write Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif., for a copy of this free phosphating booklet.

For more data, circle 43 on colored card.

"Nacromer YNC" is the new pearl essence finish by The Mearl Corp., 124 E. 40th St., New York 16, N. Y. Is more lustrous than the finest grades of natural pearlessence, and has added lustre. Can be applied by brush, spray or dip. Is easy to use, simply add a small amount to your regular coating material. Can be used on any sealed surface, wood, metal, plastic, leather, paper, etc.

For more data, circle 44 on colored card.

Paint Pumps that operate from the original containers can supply up to six guns in a direct or circulating system. Deliver material in a smooth continuous flow, and have fast cleanout for rapid color or material changes. Hot spray heaters are also described, and detailed case history facts are given on their benefits. Booklet "Why Hot Spray?" is available, as well as literature on pumps and HydraAirless products. Spee-Flo Mfg. Corp., 720 Polk Ave., Houston, Texas.

For more data, circle 45 on colored card.

"Hammercote" Finishes by Tousey Varnish Co., 520 W. 25th St., Chicago 16, Ill., allow for production touch-up without discoloration. No longer necessary to completely refinish painted pieces that have become scratched or gouged in production. Damaged place can be sprayed with Hammercote, rebaked and the newly patched area will match the twice-baked part so closely it would take an expert to see the difference.

For more data, circle 46 on colored card.

Solvents and Chemicals all under one roof to give fast, convenient service. Technical service is available and members of the group each maintain laboratory facilities to serve industry in solving problems involving solvents and chemicals. Call your group member or write The Solvents and Chemicals Group, 2540 W. Flournoy St., Chicago 12, Ill.

For more data, circle 47 on colored card.

"Precision Barrel Finishing" is the title of a booklet containing valuable information on cutting down, deburring, descaling and burnishing of stainless steel strips and many other metal parts and products. For a free copy write Oakite Products, Inc., 32F Rector St., New York 6, N. Y.

For more data, circle 48 on colored card.

Quartz Paint Ovens are based on the use of special Clepco quartz heaters which are designed to emit that part of the heat spectrum most readily absorbed by paints. Research facilities are available to determine the most efficient quartz oven for your requirements. The Cleveland Process Co., 1965 E. 57th St., Cleveland 3, Ohio.

For more data, circle 49 on colored card.

Finishing Problems engineered by men who know plant technology. Samples and technical service available on your needs in industrial finishes. Universal Paint & Varnish, Inc., Bedford, Ohio.

For more data, circle 50 on colored card.

"Iridite" Finishes for corrosion-resistance and as a paint base on aluminum and magnesium. Iridite is a simple chromate conversion treatment. Is easy to use, has outstanding performance, low in cost. Send sample parts for free processing and obtain handy reference file on these coatings. Allied Research Products, Inc., 4004 E. Monument St., Baltimore 5, Md.

For more data, circle 51 on colored card.

"Alkalume" Cleaners and Etching Compounds for use on aluminum alloys prior to painting or anodizing and Acid Solvent Emulsion Cleaner No. 1, effective cleaner for fabricated aluminum parts before finishing, are two of the materials supplied by Northwest Chemical Co., 9310 Roselawn, Detroit 4, Mich., in its line of chemicals for use with modern alloys. Detailed literature on drawing and stamping compounds for aluminum also available.

For more data, circle 52 on colored card.

Spray Nozzles for metal finishing applications. Special nozzles designed for applying phosphate coatings, hard-hitting fan spray for metal cleaning applications and finely atomized hollow or solid cone spray for metal wetting. Catalog IND gives complete details. DeLavan Mfg. Co., West Des Moines, Iowa.

For more data, circle 53 on colored card.

Viscosity Control in flow coating, dipping and other finishing processes can be done automatically with the Norcross viscosity control. Improves uniformity of coating, reduces labor and material costs and eliminates waste. Write for illustrated bulletin. Norcross Corp., 247 Newtonville Ave., Newton 58, Mass.

For more data, circle 54 on colored card.

Restore Paint to its original consistency without opening the container, whether in ¼-pint cans or in 55-gallon drums. Time required is only 2-minutes per gallon. Full information from Miracle Paint Rejuvenator Co., 128 E. 10th St., St. Paul 1, Minn.

For more data, circle 55 on colored card.

Power Spray Washers are designed, engineered, built and installed to utilize limited plant floor space. More than one-quarter century of designing, engineering fabricating and installing finishing equipment, qualifies Peters-Dalton to meet your needs. Peters-Dalton, Inc., 17900 Ryan Road, Detroit 12, Michigan.

For more data, circle 56 on colored card.

Silicone Oils and Greases for high-temperature lubrication stay put and provide long-time lubrication at operating temperatures far above and below the limits of organic oils and greases. Reduces relubrication and maintenance costs. Free 8-page brochure on Silicone oils and greases, their properties and uses is now available from Dow Corning Corp., Dept. 6620, Midland, Michigan.

For more data, circle 57 on colored card.

"Duracron" Thermo-Setting Acrylic Enamel is a new chemical composition developed for finishing refrigerators, home laundry equipment, ranges and air conditioning units. Has superior adhesion to bare metal or primer, is tough and durable. Withstands salt spray, humidity and grease. Can be used on many other products. Complete information from Pittsburgh Plate Glass Co., Industrial Sales Division, 1 Gateway Center, Pittsburgh.

For more data, circle 58 on colored card.

"driQuick" Interlocking Sections for building your own controlled-temperature infrared ovens. Have no sockets to burn out, has more intense far infrared energy with less power consumption. Impervious to vibration, shock, vapor and moisture. Dry Clime Lamp Corp., driQuik Division, Greensburg, Indiana.

For more data, circle 59 on colored card.

Paint Spray Systems for all sizes of production line operations. Typical Alemite recirculating system consists of paint with agitator and pump hoist, in-the-line pressure regulator, air transformer, spray gun and end-of-the-line pressure regulator. Free catalog available from Alemite Division, Stewart-Warner Corp., 1850 Diversey Parkway, Chicago 14, Ill.

For more data, circle 60 on colored card.

Ovens for Drying or Baking Enamels, lacquers, japans, varnishes and other finishes in less time, at lower cost, can be obtained from Young Brothers Co., 1835 Columbus Road, Cleveland 13, Ohio. Engineers are available for consultation without obligation. Write for Bulletin 4 today.

For more data, circle 61 on colored card.

Drum Upender No. 32 for upending heavy drums, takes the strain and effort out of handling drums of paint, etc. Sizes and shape of upender spreads lifting pressure over large area to prevent drum damage. Morse Mfg. Co., Inc., 763 W. Manlius St., East Syracuse, N. Y.

For more data, circle 62 on colored card.

Roller Coaters can boost your production, reduce down-time, cut coating costs. These heavy-duty machines are ruggedly and rigidly built to maintain high quality production. Apply paints, sealers, waxes, etc. to flat work such as wood, metal, plywood, plastic, etc. Literature available describing available equipment with optional features to meet your finishing needs. The Black Brothers Co., Inc., Mendota 1, Illinois.

For more data, circle 63 on colored card.

Plastisol Coatings are perfectly baked in Kirk & Blum ovens. Temperature ranges up to 600° F., with variations in temperature throughout the oven of less than 5° F. New "Ovens for Industry" catalog available from Kirk & Blum Mfg. Co., 3131 Forrer St., Cincinnati 9, Ohio.

For more data, circle 64 on colored card.

Complete Finishing Systems for enamels, lacquer, paint and varnish. Planning and engineering such finishing systems for your particular needs is the key to producing the finest products at minimum cost. Systems include metal cleaning, dry-off oven, flow coating, ventilated solvent vapor chamber, paint baking oven, etc. Catalog A-657 is available from The R. C. Mahon Co., Detroit 34, Mich.

For more data, circle 65 on colored card.

Everything Needed for Spraying any finish or coating is supplied by Binks Mfg. Co., 3116-40 Carroll Ave., Chicago 12, Ill. Paint spray guns, special spray guns, air compressors, spray booths, exhaust fans, oil and water extractors, fluid pressure tanks, etc.; over 1100 standard items backed by nationwide engineering, sales, parts and repair services. Ask about our spray painting school.

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All paint restored to its original consistency without opening the can.
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MIXERS AVAILABLE
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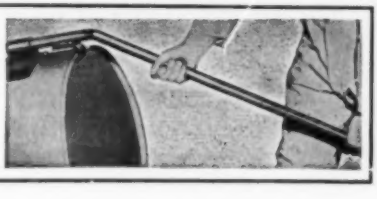

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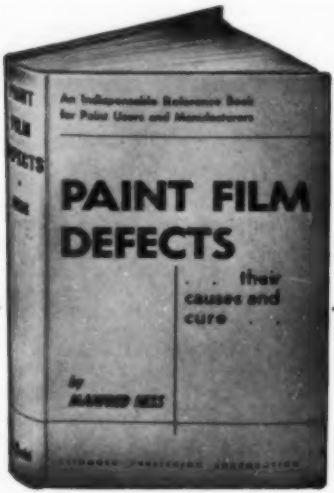

HERE ARE enumerated in this remarkably valuable book of 544 pages, all of the common and a variety of unusual and seldom heard-of defects and objectionable features that occur in paint, varnish, lacquer and synthetic enamel finishes; their probable, possible or real causes given; the effects described, and means of preventing and remedying these troubles fully outlined.

Chapters deal with these defects and troubles as they occur, 1) during or as a result of storage and preparation of materials before finishing; 2) when the materials are applied by various production methods and equipment, 3) during handling, processing or drying after application; and finally, 4) when and after the finished goods are shipped, displayed, stored or placed in service.

Defects covered include many more than could be named here, but to mention just a few there are; runs, sags, tackiness, films, too thin or too thick, slow drying, orange peel, alligatoring, wrinkling, pimples in films, pinholing, cracking, blistering, lifting, bleeding, blushing, blooming, discoloration, rainbow effects, gloss and dull areas, grained appearance, and scores of others.

Practical information is also revealed in reference to safety precautions to prevent fires or accidents in paint shops and finishing rooms, skin troubles of workmen, poison from paint materials and fumes.

By referring to the "Subject Index" of 84 pages in back of the book, it is possible to locate quickly, the answer to any particular failure, cause or remedy.

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INDUSTRIAL FINISHING

1142 N. Meridian St. Indianapolis 4, Ind.

Masking Problems are our specialty. We supply spray masking service for hand, semi-automatic or fully automatic work. Write Duggan Masking Devices, 7075 Lyndon, Detroit 38, Michigan.

For more data, circle 67 on colored card.

Industrial Ovens for conveyorized finishing systems and batch finishing systems, aluminum aging ovens, core baking ovens, flux drying ovens, special process ovens and laboratory ovens, cabinet and portable types, are available. Write for specific information to meet specific requirements. Industrial Ovens, Inc., 13821 Triskett Road, Cleveland 11, Ohio.

For more data, circle 68 on colored card.

Hamant Grainers simulate the most costly woods, fabric patterns and marble. Prints two colors simultaneously with perfect register. Four models available for continuous printing of cabinets, panels, table tops, drawer fronts, small parts. Grainers are installed under the supervision of trained servicemen. Write Hamant Tool Co., Inc., 502 Warren St., Dayton 9, Ohio, regarding a grainer for your particular needs.

For more data, circle 69 on colored card.

Strip-Coating makes good housekeeping cost less, and produces more profit. "Liquid Envelope" sprays on and then at clean-up time strip it off, respray and again your booth is ready for production. Dry film will not burn or support combustion. Coating improves illumination and promotes fire-safety. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

For more data, circle 70 on colored card.

Silk Screens in silk, nylon or metal cloth and silk screen weatherproof enamel are available from The Naz-Dar Co., 461 Milwaukee Ave., Chicago 10, Ill., for use on nameplates, toys, dials, ash trays, printed circuitry, etc. Screen and ink information available by writing Dept. P-6.

For more data, circle 71 on colored card.

Paint Hose with the synthetic-compound liner, resists solvent action and the liner shows no deterioration from the use of turpentine, acetones, ketones, acetates, etc. Special liner protects against paint contamination and discoloration. Hose connections to fit all common sizes and types of air and fluid hose, and new oil-resistant air hose are also available from The DeVilbiss Co., Toledo 1, Ohio.

For more data, circle 72 on colored card.

"Agateen" Clear Lacquers for outstanding beauty, protection and performance, have been used in industry for the last 30 years on a varied list of parts and products. Agate Lacquer Mfg. Co., Inc., 11-13 43rd Road, Long Island City, N. Y.
For more data, circle 73 on colored card.

"Clinco" Quality Industrial Finishes for both wood and metal parts and products, along with Customer Service are available from The Clinton Co., 1210 Elston Ave., Chicago 22, Ill.
For more data, circle 74 on colored card.

Protective and Decorative Finishes in exactly the kind and color you want for any industrial finishing use are available, and our laboratory/plant team can develop and produce the finish you want when you want it. Rockford Varnish Corp., Rockford, Illinois.
For more data, circle 75 on colored card.

Formulations for Plastic Products have been created by Randolph Products Co., Carlstadt, N. J. Spray lacquer coatings equal to every plastic coating problem, particularly adhesion and the tendency to craze, have been formulated in decorative color contrasts, to give a new lift to your sales results.
For more data, circle 76 on colored card.

RP Paint Arrestors increase paint spray booth efficiency, save time, floor-space and money. Inexpensive, replaceable pads reduce maintenance costs, and are more efficient than elaborate and expensive systems. Write Research Products Corp., Dept. 34, Madison 10, Wisc., for complete information.
For more data, circle 77 on colored card.

Performance Proved Spray Nozzles can lower your costs in washing, coating and rinsing. Have adjustable joints for quickly setting each spray to fit the work. Write for free catalog No. 24. Spraying Systems Co., 3240 Randolph St., Bellwood, Illinois.
For more data, circle 78 on colored card.

"Rollacoating" by Gasway saved 67% on paint, obtained a more uniform finish and gave faster production for a large metal awning company. Full details on Rollacoating will be sent with no obligation. Can be used on coating strip, sheet or panels. Gasway Corp., 6459 N. Ravenswood Ave., Chicago 16, Ill.
For more data, circle 79 on colored card.

"Cres-Lite Bronze Powders for spraying, dipping or flow coating give a plated effect like a pure metallic bronze powder. A full range of 33 colors are in stock, or colors can be matched to suit your particular needs. New colors and shades of metallic finishes can be created in our Design Department. New color card showing our "in-stock" bronze powders is free upon request. Crescent Bronze Powder Co., 118 W. Illinois St., Chicago 10, Ill.
For more data, circle 80 on colored card.

Feuzon Baking Enamel by The Lowe Brothers Co., 424 E. Third St., Dayton 2, Ohio, withstands peeling, breaking or cracking when applied on metal panel and given the conical mandrel test. Has great flexibility and adhesion when bended and stretched between conical rollers. Lowe's Service Laboratory can help you select the right finish everytime.
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No. 418 Galvaneal Primer is a bonding coat which, by the acid etch principle, welds the finish to aluminum surfaces. Suitable for use on sheet, tubular and cast aluminum, indoors or outdoors. #418 Galvaneal primer is resistant to heavy handling. Lilly Varnish Co., 666 S. California St., Indianapolis 7, Ind.
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Electric Knife Heater for heating burn-in knives used for patch and repair finishing; with or without pilot light. Approved by CSA Testing Labs. Dependable for fast, long service. The Op-Al Electric & Mfg. Co., 3135 Martindale Ave., Indianapolis 5.

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Fast-Dry Production Primers, offered by Thompson and Co., 1025 Allegheny Ave., Oakmont, Penna., can be used on any clean surface and top coat then applied in a few minutes. Give excellent adhesion and corrosion-resistance. Five colors and white. Technical data available.

For more data, circle 85 on colored card.

Exposure Tests. Actual weathering, corrosion and sunlight tests, direct and under glass for quick predetermination of durability and permanency in southern Florida by South Florida Test Service, 4201 N.W. 7th St., Miami 34, Florida.

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Wood Grain Reproduction. New Sturdy high quality machines for exacting grain reproduction—some practically automatic in operation—are offered by Schmutz Mfg. Co., 1600 W. Main St., Louisville 3, Ky.

For more data, circle 87 on colored card.

Perilite . . . . Air Dry Conversion Finish for furniture, especially blond or light colored woods—pink suites, tones, limes, grays, etc. Ideal for novelty furniture, utility tables, kitchen cabinets, bedroom furniture and other case goods. No force drying is necessary, but you get the advantages of a baked finish. A product of Perfection Paint & Color Co., Indianapolis 2, Indiana.

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Speedip Whirl Enameler is fast, clean and economical for coating a variety of small parts (up to 20-in. long) of wood, metal or plastic. It involves a power dip, lift and fast whirl, all inside a closed container. Ronci Machine Co., 2 Atlantic Blvd., Centerdale 11, R. I.

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Pearl Essence Finishes—what they are and how to use them is included in a free Technical Bulletin offered by the Argenta Products Co., Eastport, Maine.
For more data, circle 90 on colored card.

Ideal Tack Rags are used prior to painting, to wipe off and hold dust, dirt, sand particles and lint too small to see, but which might leave a blemish or defect on the final coat of paint or finish. Ideal Chemical Co., 1499 Dean Drive, South Euclid 21, Ohio.
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Ovens to Bake all pastel colors perfectly. High volume; fine quality; excellent performance. Free catalog. The Lanly Co., 760 Prospect Ave., Cleveland 15, Ohio.
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Araldite Epoxy Resins for maintenance primers and enamels, wood finishes, concrete coatings, tank coatings and marine finishes, produce coatings with the toughness and resistance of baked films at ambient temperatures. Bulletin No. 18 on Surface Coating Resins is available from Ciba Company, Inc., Plastics Division, Kimberton, Penna.
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Exon Resins by Firestone Plastics Co., Chemical Sales Divn., Dept. 745K, Pottstown, Penna., can be pin-pointed to your special needs. Six Exon resins have been developed for coatings to be applied by roller coating, knife coating, brushing, spraying or dipping. Each is resistant to chemicals, abrasion, corrosion and weather, and dissolves in the appropriate solvent. Each Exon solution resin differs in solubility and adhesion to fit the precise requirements of various solution coatings.
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"Dura-Kote" is the easy controlled, non-sludging, detergent-phosphatizer for cleaning and surface conditioning metal. Assures adhesion of paints, enamels, and other organic finishes to metals under the most severe conditions where water, humidity or soil conditions have caused trouble with streaking or apparent rusting. "Dura-Kote" cleans and phosphatizes in one step. Free daily control record book available, for three and five-stage phosphatizing operations. The DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.
For more data, circle 96 on colored card.

Isophthalic-based Coatings provide harder films, greater durability, better gloss at a lower cost. Samples for all alkyd applications, and a demonstration of the superior properties of Isophthalic-based coatings are available, as well as instructions for their preparation. Oronite Chemical Co., 200 Bush St., San Francisco 20, Calif.
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Delpark Paint Spray Booth Filters add profit to your paint water wash booth operation. These filters filter overspray from water-wash systems automatically by periodic filtration cycles. Paint particles cannot settle to the bottom and cause undue wear of the pump and recirculating system. Booth down-time is eliminated, and maintenance labor reduced and productive time of the spray booth is increased. Delpark engineers will give you complete facts on these filters. Industrial Filtration Co., 96 Industrial Ave., Lebanon, Ind.
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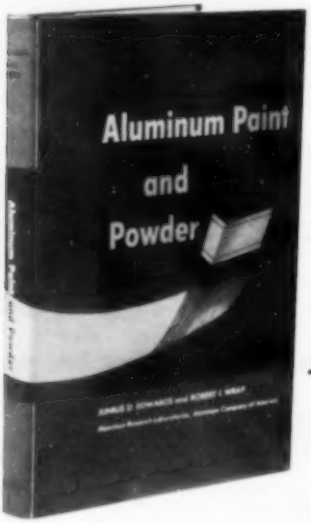

In the first two chapters, every phase of the manufacture, properties and testing of aluminum powder is fully described, with special emphasis on the processes involved, density, color and brilliance, screening, grading and handling. Subsequent chapters discuss the composition, properties and uses of aluminum paint in a wide variety of industrial and other applications.

Of major interest is the large final chapter on the uses of aluminum powder in the arts.

CONTENTS

Manufacture of Aluminum Powder; Properties and Testing of Aluminum Powder and Paste; Composition of Aluminum Paint; Aluminum Paint in the Protection of Metals; Special Properties and Uses of Aluminum Paint; Aluminum Paint in the Protection of Wood; Aluminum Powder in the Arts.

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Solvents and Thinners Recovered. This is a service provided by Solvents Recovery Service, Inc., Newark 2, N. J. Each customers' shipment of wash thinners, spoilt lacquers, degreasing machine sludge, etc., receives proper and separate treatment.

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Screen Process Catalog. Everything used in connection with screen process work—materials, supplies, tools, equipment—and more is listed, illustrated and described in a new 120-page book distributed by Advance Process Supply Co., Inc., 1442 W. Kinzie St., Chicago 22, Ill. An alphabetical index of contents appears on the last page.

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"Magic" Tack Rags for wiping surfaces clean before finishing, before rubbing and before packing for shipment. Picks up the dust and lint instead of permitting it to fly elsewhere. Wm. A. Juergens Co., 4036 Lagrange St., Toledo, Ohio.

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Electro Cold Stripper takes off Scotchlite reflective sheeting and background paint in seconds from traffic and road signs, whether aluminum or steel. Non-flammable; non-toxic; no heat; no current. Allied Finishing Specialities Co., 2641 W. Grand Ave., Chicago 12, Ill.

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Primer for 25 Metals, "Gripalloy" is available in black and colors; excellent adhesion . . . . and resistance to salt spray and solvents. Tenax Finishing Products Co., 390 Adams St., Newark 5, New Jersey.

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Acyrlic, Alkyd, Vinyloid coatings for a wide range of special jobs, are offered by The Varnish Products Co., 5206 Harvard Ave., Cleveland 5, Ohio.

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Better Protection Against Corrosion is claimed with wash primers based on Shawinigan Resins' Formvar and Butvar . . . . polyvinyl formal and butyral resins. The wash primer protective coating of only 0.3 to 0.8 mil thickness conditions steel, aluminum, cadmium, tin, galvanized iron and magnesium. Consult supplier or get details from Shawinigan Resins Corp., Springfield 1, Mass.

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Kerpon Protective Coatings, formulated of Epoxy resins, afford better protection from corrosion caused by acids, caustics, moisture, alkalies, salt spray, water and weather elements. Kerr Chemicals, Inc., Box 89-F, Park Ridge, Illinois.

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Graining Plates of any pattern, size or shape (wood grain, leather, marble, fabric, etc.) for hand or machine graining. American Richwood Products Co., 104 E. Mason St., Milwaukee 2, Wis.

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Mar-Proof Lacquer, made by The Schaefer Varnish Co., Inc., Louisville, Ky., is a performance-proven finish that cannot be easily marred or scratched. Tougher than ordinary lacquers, it meets the most critical requirements of current production. Made in either clear gloss rubbing or satin finish, it produces a splendid transparent coating of full depth on maple, walnut, gum, mahogany and other cabinet woods. Working samples furnished without obligation.

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Ransburg No. 2 Process is excellent for getting an excellent uniform high quality wrinkle finish on business machines. Rejects by the former hand spray method are reduced, paint mileage is stepped up and more pieces per gallon of paint can be finished. Ransburg No. 2 Process reciprocating disk puts the paint where it's supposed to go, on the parts or product. Ransburg Electro-Coating Corp., Indianapolis 7, Indiana.

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Primers and Enamels by The Gilbert Spruance Co., Philadelphia 3, Penna., and Winston-Salem, N. C., have special eye-appeal; are tough and fast-drying; are exceedingly durable, prolong life, preserve metal surfaces and general appearance. Are specially adaptable for coating vehicles and machines subjected to the rigors of weather, corrosion and rough handling.

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Quality Finishes can actually lower finishing costs, as proven by "cost per unit tests" run on many different products. G. J. Nikolas & Co., Inc., Bellwood, Ill., and Brooklyn 11, N. Y., features one such test run on metal wall clock cases. Complete information, samples or demonstration on request.

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Excellent Sealing Characteristics are provided by Balan Surfasand, a universal primer sanding surfacer made by A. C. Buschman & Co., Inc., 410 Frelinghuysen Ave., Newark 5, N. J. It has excellent adhesion, hi-chemical and solvent resistance; is non-embrittling and chip resistant.

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Unichrome Plastisols are vinyl coatings that stand physical service without peeling. They have appealing gloss; come in a variety of colors. Applied by all usual production methods. Manufactured by Metal & Thermit Corporation, Rahway, New Jersey.

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Water White Sealers and Lacquers assure matchless beauty, durability and protection for your distinctive design in furniture. For these quality materials write Lindeman Wood Finish Co., Inc., Indianapolis 2, Indiana.

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Satin Finish Wooling Lacquers are ideal for use where a satin sheen finish with a smooth, silky feel is desired, without requiring a costly rubbing operation. Available in water white light resistant, for use on white or pastel finishes, or in regular lacquers for darker shades such as mahogany, walnut, etc. Made by The Lawrence-McFadden Co., 7430 State Rd., Philadelphia 36, Penna.

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Push-Button Touch-Up? With the Sprayon Self-Spraying Touch-Up Tool, any employee can quickly repair the paint damage where it happens—on the production line, inspection, shipping, warehouse, etc. Free touch-up folder available. Sprayon Products, Inc., 2071 East 65th Street, Cleveland 3, Ohio.

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Guardsman Finish assures beauty, durability and high resistance to spilled liquids and hard service. Finishes for wood or metal. Can be applied rapidly with fast production equipment. Grand Rapids Varnish Corp., Grand Rapids 2, Michigan.

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Airless Spray Painting Unit. Does not atomize paint with air. Saves paint. Improves finish. It offers a good start to a better finish. Demonstrations made without obligation. Bede Products Corporation, Amherst, Ohio.

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EDITORIALS

Prepare Yourself For Effective Selling

★ Reading the business sections of the daily newspapers or the more specialized financial periodicals, one can easily realize that vast sums of money are spent on investment research. These services are offered to the individual to enable him to decide where, when, how and why his money may be invested to the best advantage.

An enterprising salesman in industrial finishes must also learn to depend on research. Unfortunately he cannot consult brokerage houses for needed statistics in regard to his investments. A salesman's investment is the time he spends to develop new and better accounts.

In competitive selling there is a distinct need not only for full knowledge of the product and how it can best serve the prospective user, but there is also the necessity of the salesman being able to sell himself and his technical services. In other words there are additional requirements over and above what one may normally consider to be his line of duty.

In years gone by the fast-talking so-called "natural born salesman" was an immediate success. He depended only on his ability to outtalk his customer. Rarely did he ever need any supplementary background. His successors in the competitive industrial finishes sales field are not so fortunate.

In today's market, representatives of firms that offer various materials for coatings must have a technical education background, with extensive practical experience either with their own or other companies in similar lines. They must be in position to coordinate the efforts of the development laboratory behind them with the production problems of their customers.

The investment phase of the sales picture is an important one. The salesman has a given amount of time to invest which must be apportioned among customers and potential customers to return a reasonable, if not the greatest possible, dividend in commissions.

When the stock market recently suffered a severe setback, all of the investors did not "head for the hills." Many of them took advantage of the opportunity to buy more shares at lower prices. So too, the salesman of today cannot afford to take any setback to heart and become discouraged. He must reinvest his time and effort by continuing to call on potential accounts.

Here is where some investment research can be of definite advantage. The salesman can study up on the full aspects of his customers' and prospective buyers' businesses from the personal habits of important executives to the most intrinsic financial dealings—of course with the

---

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chief emphasis on the effects and problems of finishing in relation to the extra details. Each customer can then be made to feel that the salesman has a complete understanding of his problems, therefore a common ground for a meeting of the minds exists. We have seen this technique work so effectively that the salesman so prepared could not later be displaced.

Nothing that is written is sure fire all of the time. Research in some instances may be a wasted commodity, but combined with sound business decisions, it can pay valuable dividends on many occasions. Some salesmen will never make a mistake of wasting any research; they just don't do any at all.—*G. Norman.*

Learn For Gossip or For Improvement?

★ Management in the finishing plant or department is likely to place high value on evidence of a worker's desire to learn. Yet without knowing a lot about what lies behind that desire, it isn't even a fair "rule of thumb" by which to gauge a man's ambition in relation to progress within the industry.

Two employees may appear equally quick to pick up all information available about every detail of finishing operations. One may be sincere in his efforts to utilize these facts to make himself more valuable and thereby further his personal progress within the industry. The other may want nothing more than material to feed into the "grapevine" which exists in every group of people. It should not be difficult to determine the obvious motives in these classifications, but if management looks no farther than the surface then both men may receive commendation which only one of them deserves.

Some men have a fact-seeking turn of mind without any intention of using what they learn for either their own or their company's improvement. The main risk here is that management will waste time and effort teaching these workers who absorb information so readily, but who have no intention of applying it to their daily problems or to their future development.

Perhaps the problem of men who wish to learn only in order to take their knowledge with them into other fields has been exaggerated. Nevertheless, no one doubts the existence of this group. Frank discussion of the worker's plans should disclose considerable information on whether management, by being cooperative in its teaching program, is building for its own growth—or strengthening future competition. As long as any reasonable doubt remains, finisher executives should move with caution.

The worker who shows only a normal desire to learn may not be half as much risk as the eager one who has questionable motives.—*M. G. D.*

The Design Engineer's Knowledge of Finishing

★ In a tour through any engineering department of note, it is doubtful if you can find more than one or two engineers, if even that many, who have any knowledge of industrial finishes, their uses, properties and methods of application.

For some unaccountable reason most design and development engineers shy away from finishing procedures. Yet surprisingly enough, industrial finishing begins on the design engineering drawing board long before the finishing department or the paint formulating chemist has a look at the new product.

Many hours, days and weeks are spent testing metal fatigue and work-

ing properties, but surface corrosion and paint failures can counteract and unbalance all the time and money spent in research and development. It is not enough for the designer to mark simple finishing specifications on his drawings and then depend on the finishing foreman to adequately coat the new product.

As far as paint application goes, and knowledge of materials at his command, the finishing foreman of any consequence will undoubtedly do a reputable job; but he is supposed to follow specifications—or orders. For example, he will not always know whether a part must have an infrared reflecting paint; that is, a paint in which no carbon black or lampblack has been used in color matching.

Possibly the product will have to be recoated at a future date. In this instance non-bleeding pigments may have to be used in the enamel or lacquer. Another factor that may enter the picture can be the necessity for using a primer not only to promote adhesion but also for such purposes as providing corrosion resistance, water proofness, etc. And there is surface treatment, such as phosphate coating, before even a prime coat is applied.

All of these and many more possibilities must be put into the specifications for product painting or finishing. The design engineer therefore should be in a position to specify what conditions the finishing procedures must cover. It is interesting to note that while coordination and liaison normally exist between the engineering department and the most production phases, it is usually absent between painting or finishing and engineering. This can be attributed to lack of adequate knowledge on the part of many engineers and hence their reluctance to delve much further into the unknown.

Progressive management would do well to impress its design engineering department on the necessity for greater learning and knowledge of finishing materials, methods and procedures.—*G. N. T.*

Order Finish Materials In Plenty of Time

★ Frequent changes in design and finish, more variety in colors, and the several different sheens used in the finishing of wood furniture today—these conditions have made it necessary for buyers of finishing materials to change their methods of purchasing. Formerly the colors and type of top coats used were pretty well standardized in most finishing departments because the same designs and colors were often used for periods of from one year to as long as ten years or more.

Of course, there are still some few manufacturers today who make it a practice to continue a design and color for quite a period of time. This is especially true with furniture in the traditional and provincial designs. The new transitional style furniture, which is popular today will, in many cases, make it desirable for the manufacturer to continue one design and color for several years because of the desire of so many people to add pieces of furniture of the same style to their home furnishings. Where furniture of this type is manufactured the finishing materials can be bought in larger quantities.

However, in the medium price field, where the greatest volume of wood furniture is produced and sold, it has become the practice of more manufacturers to change the design of furniture, and the color and style of finishes quite frequently. For this reason the average purchaser must order finishing materials in smaller

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lots in order to avoid having an overstock for discontinued suites. And usually he doesn't order the finishing materials until after each lot of furniture is started on the production line.

Most of these lots of furniture are set up or planned several weeks or months before the merchandise is actually placed in production in the cutting department of the furniture plant. *Finishing materials should be ordered at the time the furniture is put on the production schedule.* This earlier placement of an order will allow the manufacturer of finishing materials ample time to make up what is ordered. Most of the errors in manufacturing finishing materials in a hurry, for delivery on short notice, are caused by the user who places his order so late.

When orders are placed for finishing materials, the purchaser can specify the delivery date and thereby avoid having a lot of money tied up in materials for a long period of time. Also, this specifying of a later delivery date will assure the purchaser that he will have the needed quantity of materials on hand at the time the lot or cutting of furniture is ready to enter the finishing department.—*H. W. Chester.*

No Experimenting

SOMETIMES THE built-in high quality of a finishing material is reduced by users who tamper with the ingredients. Most coating materials are formulated for a specific purpose and the raw ingredients are blended to give the proper solids, viscosity and maximum durability. In most cases the manufacturer has done considerable research work to achieve the desired result.

So, anyone who adds other ingredients at a later date is actually undoing the work that has already been done for his benefit. The results are often too thin a film, causing poor build, or too thin a viscosity, producing sags and runs. It may also cause poor adhesion, and therefore, poor durability.

If materials are to be thinned at their place of use, it should be done according to manufacturer's specifications and under the supervision of the foreman finisher.—*C.I.L., Finishing Facts.*

E. W. Fasig, V. P. of Mfg. for Lowe Bros. Co., Is Honored

Edgar W. Fasig, Vice-President, Manufacturing, of the Lowe Brothers Co., Dayton, Ohio, was one of 12 national industrial leaders given awards of merit by American Society for Testing Materials at its 60th annual meeting in Atlantic City June 19.

The ASTM is a research and standards group composed of 14,000 members with headquarters in Philadelphia. Fasig was cited for "recognition of constructive contributions over many years to ASTM research and standards work, especially as a long-time officer of Committee D-1 on Paint, Varnish and Lacquer, and for administrative support."

Fasig is also a recipient of the 1955 George B. Heckel award, highest individual award in the paint industry. He was honored as a result of his "extraordinary contributions to the industry in technology and production."

New DuPont Plant in Cuba

A new paint plant will be built in Cuba to manufacture Du Pont finishes for the Cuban market. The plant will be operated by Du Pont Inter-America Chemical Co., Inc., a subsidiary of E. I. du Pont de Nemours & Co., Inc.

Decision to build the plant was prompted by the continuing expansion of the Cuban economy and the rapid growth in

recent years of sales of Du Pont finishes in Cuba. The plant's products will include lacquers, enamels, paints, varnishes, and thinners for the industrial, automotive refinish, and household and maintenance fields.

Construction of the plant, to be located in the new industrial section of San Jose de las Lajas, about 25 miles southeast of Havana, is expected to start about November 1, and manufacturing operations are to begin about September 1, 1958. The plant will provide jobs for about 100 people.

Oronite Chemical (S. F., Calif.) Announces Personnel Changes

Mr. H. I. Allen has been promoted to head the technical service group of Oronite Chemical Co.'s Marketing Department, succeeding Mr. M. P. Youker, who was recently promoted to Assistant Manager, Western Export.

Mr. Thomas J. Shea has been employed as a sales representative for Oronite Chemical Co., assigned to the New York Region.

Ciba Company Announces New Laboratory Appointments

The Plastics Division of Ciba Co. Inc., announces the appointment of Philip Maslow as Supervisor of the Coating Laboratory, and the addition of Frank Mattei and Garfield Ponce as chemists on the staff.

Mr. Maslow received B.S. and M.S. degrees from the College of the City of New York. He was formerly chemist in charge of the laboratory for a paint manufacturer in Newark, N. J. During the war, he conducted research and development on ship bottom paints for the Bureau of Ships at the Norfolk Navy Yard.

G. Ponce; Philip Maslow; F. Mattei.

Mr. Mattei received his B.S. Degree from Brooklyn College. His most recent association was with a color and chemical company in Mount Vernon, N. Y.

Mr. Ponce received his B.S. degree from the College of the City of New York. He was formerly with a manufacturer of paint and varnish in Long Island City, New York.

The Ciba Coatings Laboratory is being expanded to encompass both technical service and development in connection with the rapidly growing usage of epoxy resins in the coatings industry. Basic research developments from Ciba in Switzerland will be drawn upon for practical application in epoxy coating technology.

Central Paint & Varnish Opens Branch at Hialeah, Fla.

Central Paint & Varnish Works, Inc., Brooklyn 1, N. Y., has opened manufacturing facilities in Hialeah, Florida, to better serve customers in Florida, Georgia, Alabama and Louisiana.

Laboratories and Plant are located at 1015 E. 27th St., Hialeah, Florida. "Central" will maintain a complete line of industrial finishes, paints for home and general maintenance, and marine finishes.

Furniture Finishing Course at N. C. State College

Two new topics will be featured during the 8th Annual Furniture Finishing Short Course, scheduled for August 26-30 at The School of Forestry, North Carolina State College.

The new additions are color control in finishing and decorative finishes on furniture.

Co-sponsoring the annual course are the North Carolina State College School of Forestry, the College Extension Division, and the Southern Furniture Manufacturers Association.

Other topics to be covered include airless spraying, multi-colored coatings, and color masking toners, as well as reduction of overspray, hot lacquer coatings, finish repair and touch-up, and reduction of defects.

Students will gain actual finishing experience by using the facilities at the wood products laboratory on the State College campus.

This course is designed for furniture finishing room foremen, their assistants

or supervisors. Prof. Roy M. Carter of the college's School of Forestry will direct the course.

Prof. Carter states that experience in finishing is desirable but not essential.

Representatives from paint, varnish, lacquer and equipment manufacturers and distributors will assist State College staff members with demonstrations and discussions during the week-long course.

Automatic Viscosity Control at Norcross Exhibit in Cleveland

Norcross Corp. (viscosity control) will show in Booth No. 1268 at the 12th Annual Instrument-Automation Conference and Exhibit in Cleveland, Ohio, September 9-13, 1957.

The company will exhibit recording and controlling viscometers for process control applications in diversified industries. Viscometers will be in operation demonstrating their sensitivity and repeatability.

Specific information will be available, for example on Solvent Control. . . . Solvent is automatically added to compensate for evaporation losses in finishing (flow coating, dipping and spraying), wire coating (enamel, plastic, rubber, etc.), rotogravure printing, sizing and various other coating processes.

Austin S. Norcross, Robert A. Norcross and Robert S. Davis, Jr., will be in attendance.

Lindeman Wood Finish Has New Laboratory in Galax, Va.

The Lindeman Wood Finish Co., Inc., announces the completion of a new laboratory in Galax, Virginia. The building has 7400-sq.ft. of floor space and is furnished with the most modern equipment and facilities for research and formulation for the wood furniture industry.

The laboratory is staffed with highly trained personnel—Mr. Ralph F. Gatchel, manager, formerly the company's chief chemist; Mr. Donald R. Carmichael, artist and color technician; Mr. J. A. Cartner, finish consultant and service technician for the company's southern territory.

This expansion is centrally located for the principal purpose of better serving customers in the south.

The company (main office and plant in Indianapolis, Ind.) is celebrating its 50th Anniversary this year. The Southern Laboratory will function as a unit with the laboratory at Indianapolis.

Pad Absorbs Machine Vibration. After exhaustive research regarding industrial vibrational problems, E. H. Jacobs Northern Division, The Bullard Clark Co., Danielson, Conn., announces a new type vibration pad called "Tiger Paw." It is for use specifically with machinery subject to vibration. This durable pad, with a strong grip that holds machinery to the floor, is molded from reinforced fiber glass and vinyl resin.

The combination of poly-vinyl chloride resins, reinforced with fiber glass, produces a substance that has excellent resiliency and durability. This composition enables "Tiger Paw" pads to withstand oil, soap, detergents, water, fungus, acid and salts.

"Tiger Paw" holds machinery to the floor without the use of adhesives, and at the same time eliminates vibration problems. There is no setting or bolting required; the pad is simply placed under the machine.

Lindeman Wood Finish Company's new laboratory (research and formulation) in Galax, Va.

Technical Men For Oakite

Oakite Products, Inc., manufacturer of metal cleaning and treating materials, announces the assignment of two technical service representatives.

Edouard Sauve, who has represented Oakite in Marion, Ohio, for the past five years, joins the Detroit staff and will serve the metal industries in the northeastern metropolitan area.

Peter J. Texier, Jr., since 1952 a member of the technical staff of Oakite's service laboratory, has been assigned to serve the metal industries in south Buffalo, N.Y.

CLASSIFIED ADVERTISING

The rate on ads appearing in this department is $1.00 per line of 6-pt. light face type, per insertion. Minimum charge, $5.00. Ads set in 8-pt. extra bold face type cost $2.00 per line, per insertion.

There may be certain firms or idividuals to whom you do not want your reply sent. Simply address your communication to the box number in the ad and attach a separate list of names. Place both in a separate envelope addressed to Industrial Finishing Magazine, 1142 N. Meridian St., Indianapolis 4, Ind. If the advertiser is on the list you submit we will then destroy your letter. Names of advertisers using box numbers not revealed.

FINISHING FOREMAN WANTED

By TV and Hi-Fi cabinet plant, located 50 miles from Philadelphia. Excellent opportunity with a future for qualified man. Give age, marital status, experience, previous connections and starting salary expected. Address IF-621, care Industrial Finishing.

TOMORROW'S Products Tested TODAY

A service to aid industry in producing longer-lasting and better-looking products. Quick predetermination of durability and permanency by actual exposure test in South Florida. Write us today for full information.

SOUTH FLORIDA TEST SERVICE

EST. 1931

4201 N. W. 7th St. Miami 34, Fla.

POSITION WANTED.

Salesman now selling industrial finishing materials would like to contact manufacturer of bronze powders for Chicago area. Address IF-515, care Industrial Finishing.

POSITION WANTED.

Color stylist and technical service work with finishing house, or finishing superintendent. 27 years of finishing experience in high and medium-grade furniture. Excellent references. Address IF-512, care Industrial Finishing.

SALESMAN

Interested in sales position with reliable and progressive company with established business in New England. More than 30 years' experience in all branches. New England territory only. Salary, expenses and bonus plan. Address IF-513, care Industrial Finishing.

WANTED: MATERIALS TO SELL.

Industrial finishing materials wanted for Chicago area by an experienced salesman with following. Address IF-514, care Industrial Finishing.

WANTED: INDUSTRIAL FINISHES SALESMAN.

Large manufacturer of industrial finishes, lacquers, stains, fillers, etc., has excellent opportunity for experienced salesman in northern and eastern Texas territory.

Some following required with chance to build on many established accounts. Good laboratory cooperation, liberal commissions, replies confidential. Stille-Young Division, ALLIED FINISHING SPECIALTIES CO., 2639 W. Grand Ave. Chicago 12, Ill.

SALESMAN—INDUSTRIAL FINISHES.

Well established and expanding manufacturer will consider an experienced man for Conn.-Mass. area. Excellent opportunity, reputable organization, secure future. Answer in detail. Replies held confidential. Address IF-518, care Industrial Finishing.

FOREMAN WANTED.

Experienced foreman wanted to take charge of small finishing department in furniture factory located in Milwaukee area. Address IF-516, care Industrial Finishing.

HELP WANTED.

(1) Experienced anodizer, specialist in colors, 24-foot tanks,
(2) Experienced hard chrome plater, set up man,
(3) Experienced nickel chrome plater,
(4) Metal Polishers,
(5) Cad and zinc plater, still and barrel.

If you have what it takes and want to live in California, give full details, salary expected, etc. ATLAS PLATING COMPANY, division of Associated Baked Enameling Co., 1206 E. Slauson Avenue, Los Angeles 11, Calif.

FORMULATOR WANTED.

Experienced formulator for development of industrial enamels. Thechnical background and ability to administer laboratory functions desirable, but not essential. This is an excellent opportunity to become associated with an aggressive, growing organization. Salary open. Give full qualifications, education and employment record. All replies confidential. Send to H. A. Chloupek, LILLY VARNISH CO., 666 South California St., Indianapolis 7, Ind.

TECHNICAL SERVICE THE GLIDDEN COMPANY

Opportunity offering exceptional potential for individual with three or more years' experience as finishes engineer for large manufacturer's finishing department. Prefer man with B.S. in chemistry or Che. degree. Desire specific experience in the preparation of specifications, testing and evaluating of industrial coatings for metal surfaces. Salary commensurate with experience. For details submit complete resume to Mr. G. A. Sutton, THE GLIDDEN CO., 900 Union Commerce Building, Cleveland, Ohio. All replies held confidential.

SALES REPRESENTATIVE

To sell lacquers and enamels direct to manufacturers in and around Boston on established territory. Experience desirable but not necessary. Draw and commission with excellent opportunity for earnings. Address IF-519, care Industrial Finishing.

SALES ENGINEER.

Experience required. Large and small industrial accounts. Territory established. Full training program. Degreasers, phosphatizing washers, alkaline washers, ultrasonic metal cleaning equipment and solvents. Salary plus incentive. CIRCO EQUIPMENT COMPANY, 51 Terminal Avenue, Rahway, New Jersey.

SALESMEN—INDUSTRIAL FINISHES.

Well established and expanding manufacturer in the Newark area will consider an experienced man with proven record of achievement selling industrial finishes. Our proposition and an exceptional opportunity for security and high earnings allow us to insist on highest qualifications. Answer in detail. Replies confidential. Address IF-508, care Industrial Finishing.

REPRESENTATIVE WANTED.

High quality line of lambswool bonnets and discs, Schlegel-Amcor buffs. Good repeat items. High Commission, protected accounts. Write in confidence, giving territory covered. Address IF-505, care Industrial Finishing.

SALESMAN WANTED.

We offer a modern plant and lab, excellent service to back up a complete line of industrial lacquers. If you have experience in lacquers we can make a team profitable for both of us. To talk it over costs nothing. Why not contact us. Address IF-517, care Industrial Finishing.

DIRTY THINNERS AND SOLVENTS WANTED.

Send samples anl letter giving approximate contents. GET CASH FOR SCRAP. THE JOHANN COMPANY, 13900 Grant St., Dolton, Illinois. Phone Dolton 4850.

PAINT STRAINERS

For straining lacquers, enamels, paints. Made of heavy paper with cloth inserts in different meshes. 6-in. diameter conical shape. Write for catalog and samples. GERSON CO., Box 175-A, Mattapan 26, Mass.

FORD CUPS

THE VOL-U-METER COMPANY
Buffalo 16, N. Y.

FOR SALE.

Two infra-red drying banks, 5-ft. x 10-ft., 100 lights each. HUMPHREY'S LEATHER GOODS CO., 2337 N. Greenview, Chicago 14, Ill.

FOR SALE.

Complete metal finishing set-up, mono-rail type to handle parts up to 10-ft. in length. Phillips vapor degreaser, dip tank and infra-red oven. In Chicago area, for immediate delivery. Address IF-520, care Industriay Finishing.

POWER WASHERS.

(1) TRIPLEX 26-in. wide belt-type with wash rinse and dry-off stages..$2250.
(1) DETREX Spiral drum 24-in. diam. with wash and dry-off stages .....$1150.
(1) IMF Monorail return-type captive rail wash and rinse.....$1250.
(2) IMF 22-in. belt-type wash and blow-off stages—must move.....$ 500.
For all types of idle equipment contact
J. A. McAgy Company 17260 Filer
TW-3-6875 Detroit 12
(Your surplus listings appreciated)

FOR SALE.

One vapor degreaser as manufactured by Detrex Corp. Nickel clad construction, complete with interior four parallel mono-rails. Capable of handling 14 thousand pounds of steel per hour. Approximate size: 34-ft. long, 12-ft. 9-in. wide and 12-ft 4-in. high. Complete will all necessary equipment. If interested, contact STRUCTO MFG. CO., Route 75, Freeport, Illinois.

FOR SALE.

One hundred infrared Chromolox radiant heaters RAD 6303, 480 volts, 3,000 Watts, 74" long. Practically new. Lots of ten or more, $30 each. GEORGE KOCH SONS, INC., Evansville 4, Indiana.

FOR SALE — $1,500

Steel Strip roller-coating machine, complete with pre-heater, exhaust fans, etc. Excellent Condition. Designed to paint two 2-inch strips 60-feet per minute. Gas oven. Easily converted. Length 105-ft. Original cost $13,000. SANI-SPEED MFG. CO., 1364 E. 47th St., Cleveland 3, Ohio, Mr. Vance.

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Binks Automatic Spray Unit w/water wash, spindle conveyor and infra red oven.
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To the pearly beauty of Nacromer we've now added more lustre – in fact, new Nacromer YNC is equal to or more lustrous than the finest grades of natural pearl essence.

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Brush, spray, or dip – whatever method of application you use, Nacromer YNC requires no additional labor or equipment. Simply add a small amount to your regular coating material–that's all there is to it!

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